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DEMENTIA PRECOX STUDIES.

The Signs of Intracranial Pressure and a Study of Six Patients.

By

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THE poverty of morphologic findings in the brains of patients dead with dementia precox suggests the intensive study of these patients and their functions during life.

(1) Experience in custodial institutions and the perusal of the literature of psychiatry occasionally furnish typical examples of sudden death of dementia precox patients with the symptoms and findings of "wet brain," *Hirnschwellung*, or other conditions suggestive of an increased intracranial pressure. Nevertheless, we have found no record in the literature of any comprehensive study of intracranial pressure in any of these cases. We have been led to the study of intracranial pressure by the study of wet brain.

It is necessary to refer to the classic monograph of Franz Nissl alone in which he recounts his convincing morphologic studies of two cases of sudden death in catatonia. These two young men had each had one or more perfectly diagnostic dementia precox episodes, but they had both sufficiently recovered to re-enter the ranks of productive industry. The onset of the terminal episode was in each case without obvious cause. The fatal end was sudden in both and the findings at autopsy not unlike those occasionally seen in sudden death from acute alcoholism.

The relative inaccessibility of Nissl's monograph and the added difficulty of understanding the text which many well trained students of brain morphology experience, leads us to offer here a brief abstract of these cases prepared by Dr. G. B. Hassin, a most skillful and earnest histopathologist of the nervous system and an erudite linguist besides.

"CASE 1.—A young man of 35 years showed signs of hebephrenic dementia precox for eleven years. Catatonic excitement set in without warning followed by stupor lasting ten days. The patient died after a period of complete unconsciousness of only two hours' duration. The post mortem was performed one hour after death and macroscopically revealed *Hirnschwellung*, swollen brain.

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There was much flattening of the gyri and obliteration of sulci. The pia was tender but not edematous; the brain substance was neither hyperaemic nor edematous, but felt rather hard upon cutting. The ventricles contained comparatively little fluid. The brain weight was 1,590 grams, the skull capacity was 1,570 c.cm. instead of 1,650 c.cm., which ought to have been found for a brain of that weight. Thus there was a disproportion between the brain weight and the skull volume (Tigges' formula). The diagnosis of brain swelling was, therefore, justified. The pathological histology was confined exclusively to the cortex and largely to the anterior central convolution. This fact seems to be related to the catatonic muscular rigidity. The findings in the parietal lobe were scanty; while the subcortical white matter, the cerebellum, the medulla, the spinal cord and the basilar ganglia showed no changes whatever. The changes were for the most part confined to the ganglion cells and the glia tissue, but there were some changes in the blood vessels. The ganglion cells showed various types of cell changes which are described as fading cells, *Zellschwund*, acute cell disease, severe cell disease, chronic cell disease, incrustation of cells and fatty infiltrations. The fading of cells, the chronic cell disease and the fatty infiltrations were the most frequent types encountered in this brain. These changes are probably typical of catatonia, but Nissl is not certain about that. He positively denies their relation to the hebephrenic process and is positive that *the cause of death was the swelling of the brain, coincident with increased brain pressure.* He does not consider that the increased brain pressure was the cause of the catatonia and he concedes the possibility of the *Hirnschwellung* being a terminal or agonal manifestation.

"Case 2.—A man 24 years of age had suffered for four years of hebephrenic dementia precox. Nine days before his death hallucinations with catatonic excitement came on and advanced rapidly to a lethal end. The autopsy was performed twenty-four hours after death. There was a blood coagulum over the right hemisphere between the dura and the pia. The pia itself was smooth and transparent. The brain was flattened and the gyri partially obliterated. A moderate amount of cerebrospinal fluid was found in the ventricles. The brain weight was 1,560 grams, the skull content was 1,625 c.cm.; it ought to have been 1,733 c.cm., so that there was a disproportion (Tigges' formula). The diagnosis of *Hirnschwellung* was made. Histopathological changes were found in the cortex, the pons and the basal ganglia, but none in the cerebellum and spinal cord. Changes were found in the ganglion cells and the glia, but none in the fibers or in the blood vessels. Ammon's horn and the frontal cortex proved to be especially affected, while the central and occipital regions were less involved. The cellular changes were of the various types mentioned in the previous case. There were, moreover, some changes in the pia and fresh meningeal hemorrhages, but no edema. The cause of death was considered by Nissl to be *Hirnschwellung*, as in the previous case, but the histopathological changes were not the cause of death. The increased brain volume, the *Hirnschwellung*, has some relation to the catatonic process; that is, the catatonia was probably dependent upon it. The histopathological findings, as in the previous case, have nothing to do either with the hebephrenia or with the catatonia, though they might be held somewhat responsible for the catatonic excitement."

Hassen concludes his abstract with the following observation:

"As can be seen from the report of these two cases and the description of wet brain given by Beifeld and Sceleth, as well as by LeCount, of Chicago, 'wet brain' and *Hirnschwellung* are not identical. In the former, the pia is edematous, the sulci are widened, the gyri are narrowed, the fluid in the ventricles is increased, and the brain is edematous, just the opposite to what Nissl finds in *Hirnschwellung* in sudden death from dementia precox."

(2) The changes in the brain in dementia precox are not acute, sudden and agonal, as the studies of Southard, Myerson and others have shown. These changes are chronic and permanent and their investigation, and even the tabulation and charting, of brain weight and cranial proportions are significant of a profound pathological process. The increased sulphur content of the brain in dementia precox which was demonstrated by Waldemar Koch is confirmatory of this profound metabolic disturbance.

The increased intracranial pressure in hydrocephalus has long been recognized and some clinicians have considered that this symptom was sufficient to demand relief by tapping or by decompression, regardless of the unknown etiology of hydrocephalus and the acknowledged inefficiency of tapping and decompression to bring about a permanent cure. Southard has recently shown that many cases of dementia precox come to autopsy with advanced internal hydrocephalus, while nearly every case of this disease, even though of short duration shows an increased amount of cerebrospinal fluid and a dilatation of one or more of the ventricles—nineteen out of twenty times the left ventricle. Moreover, it has been repeatedly demonstrated since the first observa-

tions of Gottlieb C. Wagler, in 1788, that congenital hydrocephalus is coincident with, if not dependent upon, an inadequacy of the adrenal cortex, and this fact was fixed upon by Czerny of Heidelberg in 1899 as an indication for his operation of draining the cerebrospinal lake into the peritoneal cavity (v. Levy, 1913).

(3) In dementia precox the blood pressure is usually low and, moreover, the injection of half a c.c. of adrenalin (P. D. & Co.) does not raise it, but more often lowers it. It seems likely, therefore, that the function of the adrenal gland is disturbed in this disease and may in some manner be related to the hydrocephalus observed by Southard.

(4) The cause of the low blood pressure in dementia precox is still a mystery. In morphine habitues among Caucasians, Pettey found that the blood pressure was above normal, at least in the patients upon first admission to the hospital for treatment, but Concepcion and Bulatao (1917) found a low blood pressure in sixty-five adult Filipinos upon whom the studies were made four or five days after admission to the hospital prison for cure of the morphine habit. The average age of these patients was 40.6 years, the average systolic pressure was 107.6 mm. of mercury, the diastolic was 76.8 mm., while the pulse pressure averaged 30.8. The average pulse rate was 79.

(5) In epidemic ergotism which occurs at regular intervals in Russia and has been studied by a number of careful psychiatrists, no observations on the blood pressure in this condition can be found in any literature accessible at the present time. The balance between the action of the various toxic amines of ergot would doubtless determine whether the blood pressure would be high or low. If tyramine was in excess in the smutted rye of any season, the blood pressure would be raised in those who ate bread made from it, while an excess of histamin in the smut would cause the blood pressure to fall below normal.

(6) Some six years ago one of us reported the case of Gale D. in a New York medical journal. This patient gave a history of injury of the head and suppurating right ear and now he had become catatonic, mute, inactive and untidy. Dr. Brown Pusey found papillitis of the right fundus and together with the blood findings considered the probability of right sigmoid sinus thrombosis or abscess above the right tegmen tympani. Although no abscess was found, the ventricles were tapped and a fluid, apparently normal, was removed. During the following nineteen days the patient gained twenty pounds and became bright, clean and intellectually perfectly clear. Strange enough four months following this procedure there was a symmetrical gangrene of both big toes.

In the Bulletin of the Northwestern University Medical School, the next year Dr. Julius Grinker criticized this operation from a reading of the case history in the hospital records, and his remarks are worthy of consideration.

(7) Georges Blin has made the most careful examination of the fundus in nearly 400 consecutive cases of dementia precox at Dide's clinic at intervals during three years. The results are similar to those associated with serious intestinal intoxication and disturbances of intracranial pressure. Indeed, they resemble in many particulars the findings in brain syphilis, in brain tumor, and in tetany, and they are not unlike those which are seen less frequently in delirium tremens. The two accompanying charts exhibit graphically the conclusions of Blin's monograph, and show that the ocular symptoms of dementia precox are not inconspicuous. (Fig. 1 and Fig. 2.)

(8) Perhaps not every psychiatrist has noticed the enlarged veins just under the skin of the upper lids and behind the auricles in cases of dementia precox. (Fig. 3 and Fig. 4.) These veins are not as prominent and bizarre as those observed in tumor of the brain, but they are perfectly obvious to anyone who will give them attention. In young people they resemble the enlarged veins in the lids which every practitioner has noticed in the second week of whooping cough. We have found these enlarged veins in most of our patients in a large receiving hospital.

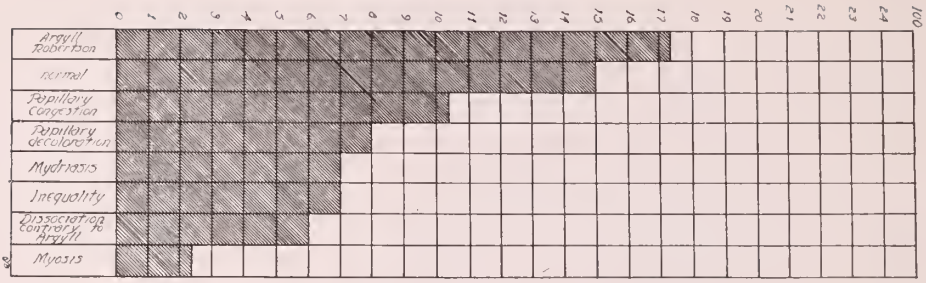

Fig. 1.

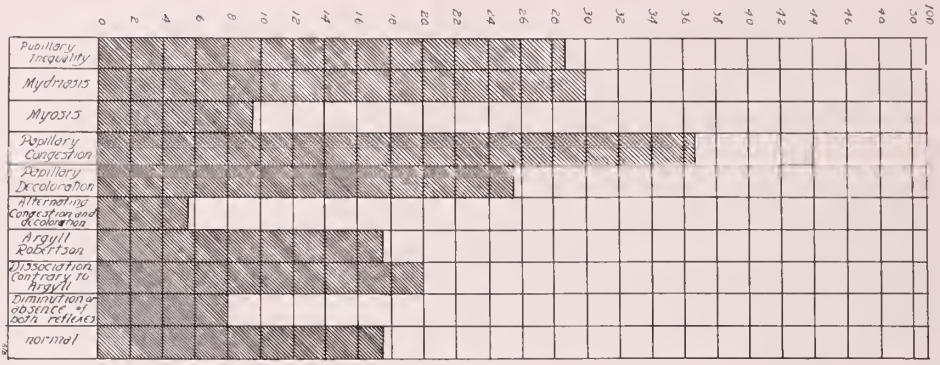

Fig. 2.

Fig. 3. Harold Egan. The left upper lid, with enlarged veins. It has been difficult to make these blue veins stand out in the photograph though they are very plain in the lid itself.

Fig. 4. This lid showed no enlarged veins. He was a healthy young laboratory servant. Joseph Kennedy.

Dr. G. Wilse Robinson has reported the therapeutic results of drainage of the cerebrospinal lake in grave cases of catatonic stupor in dementia precox patients. In two of these patients the intraspinal pressure was between 200 and 300 mm. of water, in the other patient the spinal pressure was very low. Repeated drainage was favorable. He does not, however, mention any enlargement in the veins of the lid or the auricle, or any changes in the fundus of his patients.

We recognized at the start that the only absolute and indisputable method of determining the intracranial pressure would consist in connecting a manometer with one of the ventricles of the brain, but we believed that in most instances it would be sufficient to measure the intraspinal pressure by lumbar puncture and thus avoid the more dramatic if not the more dangerous procedure. For this purpose we used a simple graduated glass tube large enough to diminish capillary attraction to a minimum (1 mm. in internal diameter). This tube was bent at a right angle at one end and was forty centimeters long. A male connection for the spinal puncture needle was attached to the lower end of this tube by means of a short piece of rubber tubing. The patient was bent up on his side in the usual position and the puncture made. As soon as the first drops of spinal fluid appeared, the manometer was attached to the needle. The fluid rose slowly in the tube and when the patient was perfectly still and breathing quietly the height of the column of spinal fluid was read. The pressure of the spinal fluid in health as taken by an apparatus of this kind is usually reckoned at 50 to 110 mm. of water. The specific gravity of spinal fluid is 1.006 and thus the probable error of observation makes any correction for the specific gravity unnecessary. When the patient is sitting up, however, the reading of the manometer is about 150 mm. higher. It is very important that the manometer tube should not be too large or too small and that as little as possible of the spinal fluid should be lost. There is only a small quantity of this fluid in health, 60 to 80 c.cm. and most of this is in the ventricles of the brain. If much fluid should be lost, it might make the reading of the intraspinal pressure too low, or it might induce unpleasant symptoms.

The six patients here reported are undisputed cases of dementia precox. They show signs of intracranial pressure, enlarged pupils, enlarged veins in the upper lids and behind the auricles, and so far as examined, changes in the fundus. The only one of these patients with an intraspinal pressure even approaching normal (105 mm. of water) is Charles Messer. In this instance the fluid rose slowly in the manometer and did not fluctuate when he struggled. In another patient, not here considered, George Gilroy, the intraspinal pressure was 60 mm. of water and did not fluctuate when the patient coughed. Both of these patients have greatly dilated pupils and exhibit every other evidence of intracranial pressure, but they show very low spinal pressure and the spinal fluid drops slowly from the needle.

None of these patients complain of headaches and even deny any such symptom, and two of them who have recovered of every mental and every other physical symptom following treatment, still have a high intraspinal pressure. Many other patients have been submitted to puncture and manometer studies. They have either had a high intraspinal pressure or if it was low it did not rise when the patient coughed or struggled. Six cases are selected because they were the first examined and exhibit all the finding found in a larger number. The more extended report of a few cases seems more significant than the isolated study of spinal pressure in a long series.

The favorable results in three comatose or stuporous patients which Robinson observed after lumbar puncture and drainage of the spinal canal gives a clinical significance to these studies.

The accompanying chart, Fig. 5, presents an outline of the six histories and the detailed abstract of one of these histories follows for confirmation. These patients were all received at the Psychopathic Hospital of Cook County for commitment. Two of them, Harold Egan and Charles Messer, had already been patients in State Hospitals

for periods of six months or more. Joseph Schraw has so far recovered that he is at work, but his intraspinal pressure still continues above 200 millimeters of water.

The prompt fall of the intraspinal pressure after the intravenous injection of 160 c.c. of 33 per cent. solution of glucose was extremely temporary. In one instance, not here considered, the intraspinal pressure had returned inside of eight hours after the injection and six hours after it had reached its lowest recognized ebb. Perhaps the outline of the studies on the first patient in the series will be instructive.

Anamnesis of Fred Madaus.

This patient is a well-built brunette boy, twenty-one years old. He was born in Chicago of German parents. He is five feet eight inches tall and usually weighs 135 pounds. He was not a very healthy child and was often out of school on account of sickness. He was the middle one of five children. His youngest brother comes to see him and he is remarkably bright. There is no insanity in the family, but the father is now in the last stages of pulmonary tuberculosis. His mother is dead and the step-mother has been the support of the family. She says Fred had typhoid fever and diphtheria. He has always been a quiet and well behaved boy and liked school. He was never absent from school except when sick. He reached the seventh grade.

While only 14 years old and then in the fifth grade, he went to work for Mandel

	Age of Patient.	Duration	Highest Systolic Blood Pressure	Number of Red Corpuscles	Blood Sp. Fluid Wassermann	ocular Adrenalin Pressor	Upper Lid Enlarged Auricles Tendons Irises	Intra Spinal Pressure	do 2 hours after Glucose
Fred Madaus.	20	5m	130	6,656,000	o o	++	++	233	50
Adolph Cankar.	26	6m	120	5,696,000	o o	++	++	155	28
Edwin Burke.	17	2y	120	5,600,000	o o	++	+++	285	
Harold Egan.	20	3y	118	7,830,000	o o	++	++	245	
Jos Schraw.	20	2y	130	5,216,000	o o	++	+++	260	
Charles Messer	15	2y	90	7,190,000	o o	++	++	105	

Fig. 5. Chart of six dementia precox patients with findings related to intra-spinal pressure.

Bros. as an errand boy, and continued with them until he was brought to the Psychopathic Hospital. He was then receiving $12.00 per week. He went to night school every winter during the last six years.

About May 1, 1917, he became gradually mute when at home, but at Mandel's he was often observed talking to himself and his boss said he muttered: "Right, wrong; yes, no;" over and over again. He entered the hospital early in May. Examinations were at once begun. His anamnesis and mental examination was made by Walter Ford. The Wassermann reactions on blood and spinal fluid were both negative. The Abderhalden gave a large number of positive reactions. The pituitary and motor cortical areas, the cerebellum, the basillar nuclei, the parathyroid and the testicle were particularly positive, ++. The concentration of his blood was marked, 7,500,000 to 6,500,000 most of the time, and low leucocyte content. The Arneth count was 13, 51, 34, 2, 0=100, thus showing an advance of the peak. The polynuclears were 75, small mononuclears 23.5, large mononuclears 1.0 and eosinophiles 0.5.

Repeated blood cultures were negative. The blood pressure was rather high, 150 to 100, and the adrenalin pressor paradox less marked than usual, Fig. 6. The ocular paradox was always very marked. The examination of the heart was made by Dr. Bayard Holmes, Jr., on June 26, 1917. The apex was 3¼ inches from the midline in the sixth interspace. The upper border of dullness, lower edge of third rib. The dullness extended three-fourths of an inch to right. There was a distinct systolic thrill. Both aortic and mitral tones were present. There was a systolic murmur just inside the nipple line transmitted to the fourth left interspace. Pulse 85, blood pressure 150-80. There is therefore a diagnosis of mitral insufficiency of rheumatic origin.

The intellectual tests of Rossalimo were made by Prof. H. S. Stevens and are exhibited in the accompanying chart, Fig. 9. The first two patients on this chart were not dementia precox patients. The third was a brother of Adolph Caukar in our group.

The barium meal was given at five in the morning and the fluoroscopic examination made at eleven A. M., by Dr. Edwin S. Blaine at the County Hospital. The meal was found entirely in the cecum. To the second barium meal the stomach showed a normal configuration and the duodenum filled normally and rhythmically. Sub-

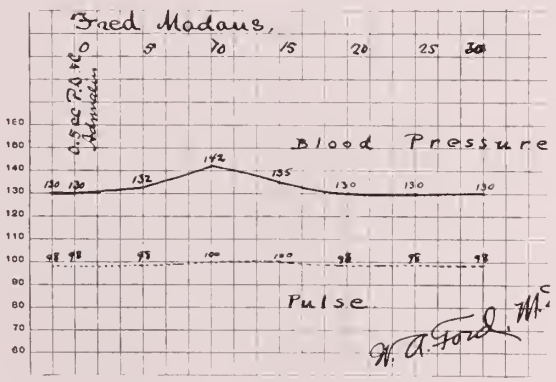

Fig. 6. The adrenalin pressor paradox of Fred Madaus.

sequent examinations showed protracted delay of test meals in the cecum and in U-shaped portion of transverse colon in front of contracted Cannon's ring. The motor efficiency of the terminal colon was manifest in its emptiness and in its moderate distention with gases. The sigmoid was loaded with the barium residue at every examination.

The stools on May 18th were found neutral, a pH of 7.2, and the total bacterial count on Endo's agar medium was 70,000,000 per gram of stool. On June 6th another stool showed a reaction represented by pH 7.0. A medium composed of histidin and buffer salts alone was inoculated from this stool and growths obtained both in oxygen and in oxygen free atmosphere. Their further study is going on.

Watery extracts were made of stools freshly passed without laxatives and after uninterrupted ward diet. After centrifuging, filtration and concentration the filtrate was found Pauly active and oxytocic. After treating with steam and precipitating with excess of absolute alcohol, filtering and evaporating the alcohol, the watery filtrate was Pauly positive, oxytocic and gave the skin reaction. After further purification, crystallization and dilution with water so that 5.0 c.c. of extract represented 100 gr. of solid stool, the specimen was submitted to Professor Houghton of the Laboratory of Parke, Davis & Company, Detroit, and was examined quantitatively by the oxytocic

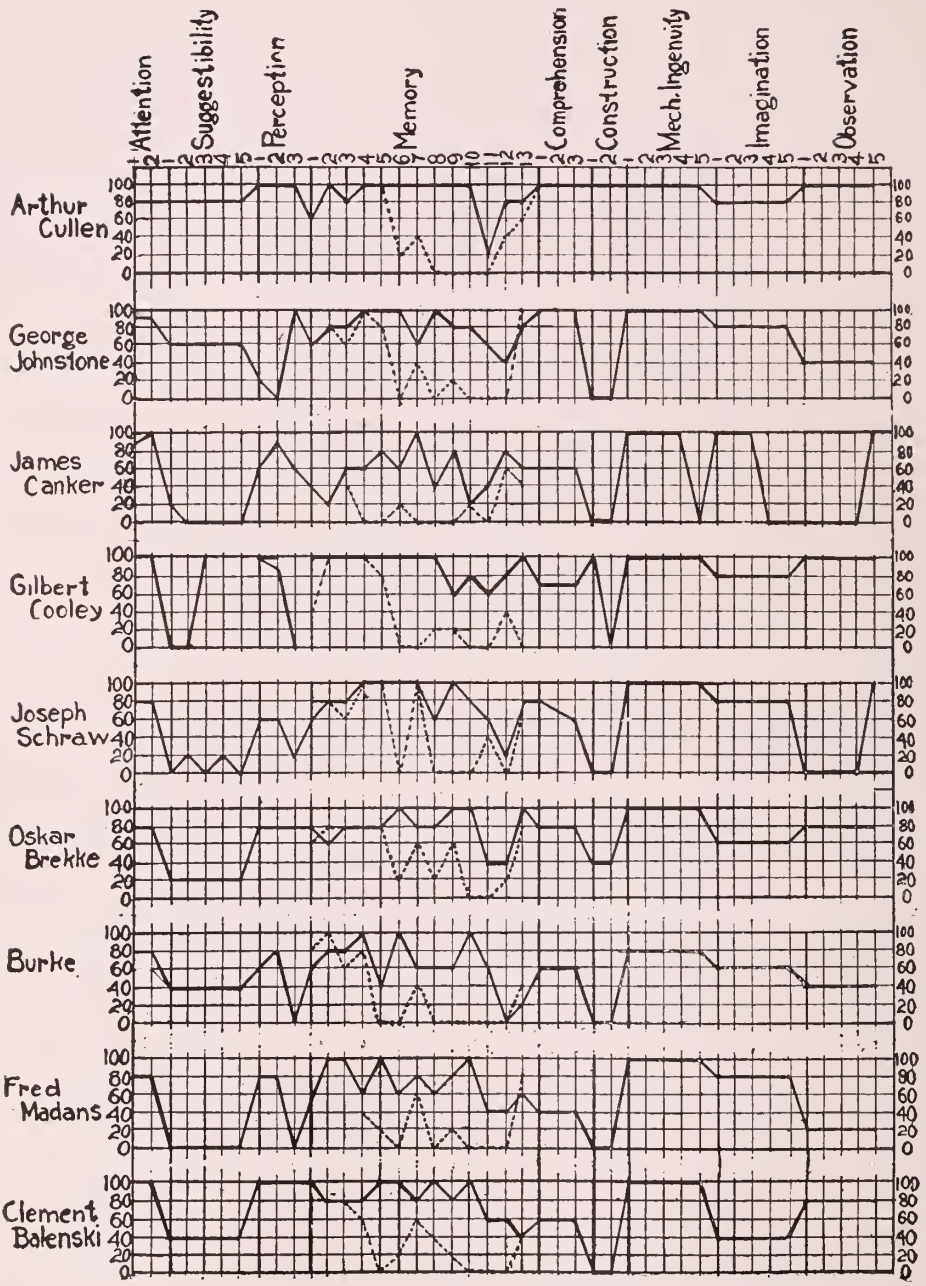

Fig. 9. Graph showing results of Rossolimo tests on one case of manic depressive insanity (Arthur Cullen) one case of epilepsy and bromidism (George Johnstone) and seven cases of dementia precox. These examinations were made by Prof. Herman Campbell Stevens. (v Proceedings of Sixth Annual Meeting of Alienists and Neurologists, 1917, p. 209.)

method used constantly in the standardizing of adrenalin. This extract was Pauly positive and gave an exquisite skin reaction, and was reported to be equal in oxytocic potency to a solution of one in twenty million of histamine.

During July, a number of normal salt injections were given Fred Madaus intravenously. His general condition was improved. His weight increased and he became

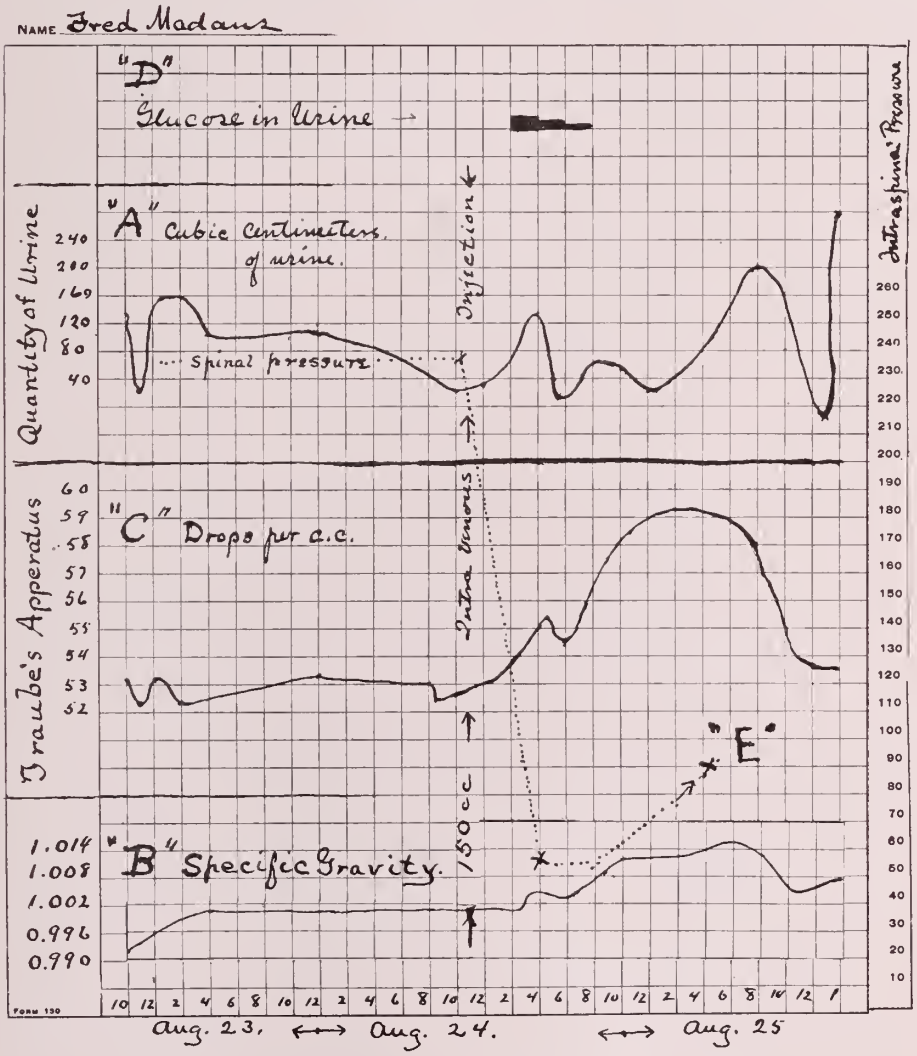

Fig. 7. Chart of Fred Madaus, showing five measured condition.

"A." This graph shows the amount of urine passed every two hours during August 23-25.

"B." This curve exhibits the specific gravity of the urine passed during the same period.

"C." This curve represents the number of drops per c.c. of each two-hour specimen of urine. The curve is very characteristic especially during the four hours immediately following the intravenous injection.

"D." This graph represents appearance of glucose in the urine. Only three specimens contained any glucose whatever.

"E." This dotted line with the figures at the right records three observations on the spinal pressure. 230 mm. before the glucose injection and 55 mm. afterwards.

more tidy. He still talked to himself, but would generally answer questions. His intraspinal pressure was found to be high and the saline injections did not lower it. It was noticed that his urine had a specific gravity below that of water. It contained much acetone.

In order to reduce the intraspinal pressure experimentally it was decided to use intravenous injections of 33 per cent. glucose solution, at the same time observing the viscosity of the urine. The urine was collected at short intervals for a day or two before the injection, its specific gravity, quantity and viscosity (Taube's stalagmometer) noted and charted. The results are exhibited in Fig. 7. When the experiment was begun the spinal pressure was 233 mm. of water, with the patient on his side. Two hours and a half after 160 c.c. of glucose solution had been injected, the pressure had gone down to 50 mm. of water. The condition of the urine during two days of the experiment is very interesting. A few days later the spinal pressure was again above 200.

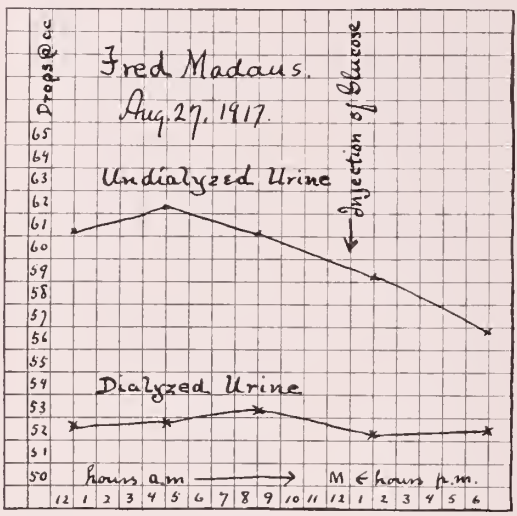

Fig. 8. This chart shows the number of drops per c.c., the viscosity reaction of the urine of Fred Madaus with the Traube stalagmometer before and after injection with glucose and the reaction of same urine after being dialysed against running water. This work was done by Walter Hart. It indicates that the increased viscosity was due to dialysable substances.

Sugar appeared in only two specimens of urine, one hour and one-and-a-half hours after the glucose injection.

It was now thought best to see if the increase in the viscosity of the urine was due to colloid or to dialysable constituents. Therefore, the viscosity of five specimens of his urine passed on Aug. 27th was measured with the Traube instrument and the same urine dialyzed in running water and again tested. The result is shown in Fig. 8. It would appear from this graph that the viscosity was due to dialyzable substances.

On August 29th, Fred Madaus was transferred to a surgical ward and an appendecostomy was performed by Dr. Thompson. He was returned to the Psychopathic Hospital a week later and irrigation of the cecum begun. (This history will be continued in subsequent publications.)

The relation between intraspinal pressure (and presumably intracranial pressure) and blood pressure are unaccountable. The blood enters the cranium with a pressure of more than 120 mm. of mercury. The blood leaves the cranium under a pressure

constantly varying with inspiration and expirations, but generally a positive pressure. Why the normal intraspinal pressure is only one-twentieth the intravascular pressure seems difficult to determine.

The viscosity of the serum of the circulating blood may be .and probably is related to the *Hirnschwellung* or the wet brain. It may also be related to the secretion of cerebrospinal fluid, as it is related to the excretion of urine. The viscosity of the blood has not been studied in any of our cases, though Benigni has made significant observations which we have not yet been able to repeat. The remarkable change in viscosity which results from the symmetry and the unsaturated linkages and groupings of alipathic and aromatic amines and their derivatives instituted by Mussel Thole and Dustan are pregnant with possibilities in the light of the histamin intoxication of dementia precox patients already demonstrated.

Conclusions.

1. The intracranial conditions in dementia precox are those of increased pressure.
2. In some patients in every stage of the disease, the spinal pressure is very high, 160-350 mm. of water.
3. The intravenous injection of 150 c.c. of a 33 per cent. solution of glucose brings down the intraspinal pressure rapidly but temporarily without any change in the mental symptoms.
4. After one patient had recovered mental and all other physical signs of histamin intoxication, the intraspinal pressure still remained high.
5. In case of low intraspinal pressure in dementia precox there is some evidence that the spinal pressure and the intracranial pressure may not be the same.

BIBLIOGRAPHY.

Barbieri, P., and Carbone, D.: *Die akute Schwellung des Gehirns und die kolloidale Lehre von Oedema. Bioch. Zeitschr.*, 1913, 49, 293-316.

Benegni, P. F.: *La reazione miostagminica sul sangue di alcuni malati di mente. Rev. di pat. nerv. & ment.*, 1913, XVII, 92.

Blin, Georges: *Démence précoce.* Paris, 1905, 241 pp.

Concepcion and Bulatao: Blood Picture in the Filipinos. *Phil. Jour. Sc.*, B. XI, May, 1916, p. 135.

Czerny. A.: *Hydrocephalus und Hypoplasie der Nebennerven. Centralbl. f. alg. Path. u. path. Anat.*, 1899, X, 281-286.

Dunstan, A. E.: The Viscosity of Liquids. London, 1914, 91 pp., bibliography.

Holmes, Bayard: Trunk Anesthesia. A Case of Mutism. *Medical Record*, New York, December 30, 1911.

Kestner, P.: *Hydrocephalus und Hypoplasie der Nebennerven. Centralbl. f. alg. Path. u. path. Anat.*, 1907, XVIII, 433-435.

Koch, W.: Chemical Studies of the Brain in Cases of Dementia Precox. *Jour. Exper. Med.*, 1911, 13, pp. 301-307.

Levy, Jacob: *Ueber das Verhalten der Nebennerven bei Hydrocephalus congenitus*, 1913, *Thesis Berlin*, 46 pp. bibliography.

Mussell, Thole and Dunstan (Two Titles): Tr. Chem. Soc., 1912, 101, p. 1008 and 1913, 103, p. 317.

Myerson, A.: Relative Weight of the Liver and Brain in Psychoses. *J. M. & N. D.*, 1914, XLI, 441-445.

Nissl, F.: *Zwei Fälle von Katatonie mit Hirnschwellung. Beit. z. Frag. n. Bez. z. klin. u. unat. Befund.*, 1914, j, 1-112.

Reichardt, M.: *Ueber die Untersuchung des gesunden und kranken Gehirnes mittels der Wege.* Jena, 1906, 101 pp., esp. p. 89. Also, *Allg. Zeitschr. f. Psych.*, 63, p. 183.

Sceleth and Beifeld: Cerebral Edema (Wet Brain) in Chronic Alcoholism. *A. J. M. S.*, 1915, 149, p. 881.

Tigges: *Das Gewicht des Gehirns und seiner Thule bei Geisteskrankheiten. Allg. Zeitschr. f. Psych.*, 1888, 45, p. 97.

THE INFLUENCE OF THE BRAIN ON OVARIAN FUNCTION IN MAMMALS.

By

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IN FORMER experiments on the functional relations between the brain and the ovaries* I demonstrated that partial lesions of the brain (hemicerebration) in hens and pigeons produced marked functional and trophic disturbances of the sexual glands. These disturbances were characterized by immediate and remote effects confined to the parenchyma of the ovary and could be interpreted primarily as the effects of visceral shock following trauma and secondarily as a functional deficiency of the organ caused by the mutilation of the brain.

The phenomena immediately following the trauma in birds consist of an arrest of the reproductive activity of the sexual glands followed by a rapid process of involution of all or almost all of the pre-existing ovules depending upon the manner of reaction of the animal to the trauma, whether it recovers completely or not from the trauma.

Where the animal overcomes the period of shock it quickly recovers its general condition. The functional arrest and involution of the ovarian parenchyma assumes a progressive character only for the more mature ovules which are always condemned to complete destruction rapidly taking place in a few days. In the small and medium-sized ovules, on the contrary, the functional arrest and the involutive process are not progressive, but after attaining a certain degree undergo anatomical and functional re-integration in consequence of which they in a short time continue to develop as at first.

Where the animal does not overcome the period of shock following the trauma as frequently happens in totally decerebrated birds, there follows a state of general and progressive cachexia usually of three to five weeks' duration. The ovaries, instead of regaining their physiological function, may undergo a progressive involution with complete destruction of the ovules which succumb to a rapid disorganization (direct absorption of the ovules, atresia, liquefactive and coagulative degeneration) as described in my previous article (Il Cervello e la Funzione Ovarica. *Riv. Sper. di Fren.*, Vol. XXXVIII, 1912). These cases, frequent in birds, form an exception to the rule and are interpreted by me to be the result of complications of a degenerative character occurring in the spinal medulla in consequence of the operation on the brain.

The remote effects of involution in the ovaries, which represent true symptoms of residual deficiency, are slow and progressive. These in part are the evident expression of a condition of functional torpor of the organ as a result of which the ovulation becomes decreased, delayed and weakened; in part they are the expression of the processes of physiologic destruction of the ovarian parenchyma. There is an accompanying qualitative imperfection of the procreative potentiality. The life period, also, of these animals is notably shortened. After one, two or three years of apparent general well-being they fall into a state of progressive cachexia, accompanied by a rapid involution of the ovarian parenchyma, followed by death. These changes I have interpreted as due to early exhaustion analogous to senile exhaustion.

*Il cervello e la funzione ovarica. *Riv. Sper. di Fren.*, Vol. XXXVIII, 1912.

The experimental observations forming the basis of the present article were carried out on 21 bitches and consisted in part of destruction of the dorsal surface of one hemisphere of the brain and in part of such bilateral, partial destruction. The animals either died or were killed at varying intervals, the first of them within three months after the operation. Microscopic sections of the ovaries were made in each instance, the ovaries being previously fixed in Bouin's fluid and the sections stained with Delafield's

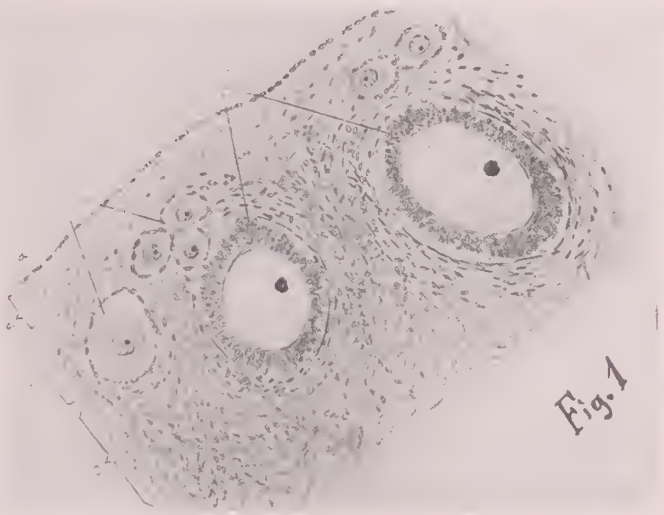

Fig. 1. Ovary of a bitch subjected to bilateral destruction of the frontal lobes; death during epileptic attack 24 days later. *a*) Mucosa of ovary; *a'*) germinative epithelium; *b*) zone with numerous normal primary follicles (1); c) zone with follicles in advanced growth and in involution (2). X 150 diam. Alum hematoxylin.

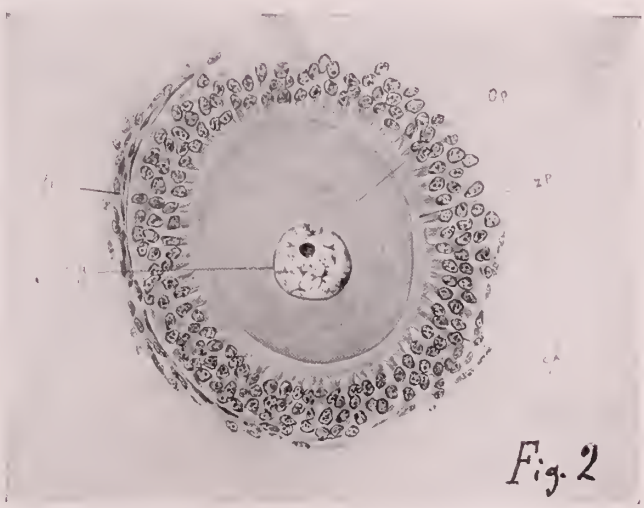

Fig. 2. Normal ovarian follicle in stage of advanced growth from an adult bitch; *ti* internal follicular tunic; *ef*, follicular epithelium; *zp*, zona pellucida; *op*, ooplasm; *tvg*, germinative vesicle. X 500 diam.

alum hematoxylin and Heidenhain's iron hematoxylin, eosin being used as a counter stain.

Description of Results.—In the first group of experiments there were 6 bitches. Two of these were subjected to total destruction of the dorsal surface of one cerebral hemisphere. Four were subjected to bilateral destruction of the frontal lobes. These animals either died in coma or with epileptiform symptoms about 9 days after the operation. In all of them the ovarian findings were negative. No noteworthy change was observed in the structure of the organ which seemed to be supplied with numerous follicles in various states of growth and in perfect normal condition.

In the second group of experiments were 2 bitches. One was subjected to bilateral destruction of the frontal lobes and the other of the occipital lobes These animals died 12 and 13 days, respectively, after the operation. In the first bitch the findings were entirely negative; in the second bitch they were positive as follows: although there were various sized follicles of normal condition in the ovaries those follicles nearest maturity showed characters of an incipient involution that was absent in the control animals. The follicular epithelium retained its normal structure and appearance, but the ooplasm showed some rarefaction, the cytoplasm of the germinative vesicles was slightly cloudy with a tendency to take the hematoxylin stain and the chromosomes had lost their delicate and slender form and were thicker than ordinarily. In other bitches under longer observation the findings, in the majority of cases, were positive; in a few instances only were they negative.

In the third group of experiments 8 bitches were operated upon: some were subjected to bilateral destruction of the occipital lobes, others to destruction of the occipital and temporal lobes and the remainder to the destruction of the frontal lobes. The animals were either killed or died with epileptiform symptoms between 24 and 85 days after operation. The ovaries showed parenchymatous changes of a simple process of involution, without true degenerative changes, involving the ovarian follicles and most marked in those of an advanced state of growth. The more typical and more marked changes were present in the ovaries of two of the animals that were kept under observation for 24 and 44 days, respectively, after operation. The stroma, the interstitial tissue and the blood vessels showed nothing noteworthy in these two cases. The follicular changes consisted of a dullness of the epithelial cells which seemed swollen, of indistinct outline, with a hardly distinguishable nucleus poor in chromatin granules. Among these cells in chromatolysis were others showing atrophy and marked pigmentation, but their number was not unusually greater than met with in normal conditions as a result of incessant renewal of the tissue. Neither in the more mature follicles or in the vesicular or Graafian follicles, in which the epithelial changes reached their maximum degree, were these atrophic and pigmented cells present in greater number than normally. The follicular fluid was scarcer than in normal conditions.

The zona pellucida of the ovule had lost its homogeneous structure and appeared inspissated, fibrous and wrinkled. The ooplasm showed rarefaction and vacuolation, so that upon staining with iron hematoxylin it assumed a fibrillary and reticular structure. The germinative vesicle always seemed to be the part most affected by the process of involution and it was atrophic, deformed, wrinkled and separated as a mass intensely stained with hematoxylin in which it was impossible to make out the nucleolus or the chromosomes. It was only after prolonged differentiation of the preparation that in the cytoplasm of the vesicles could the chromatin elements be seen in the form of various sized, irregular, vacuolized granules. Not in all the ovules was the process of equal degree. It was an incipient involution characterized by a slight rarefaction of the ooplasm and a simple cloudiness of the cytoplasm associated with a disintegration of the chromatin elements.

In the other 6 bitches that were killed 45 to 85 days after the operation, in which the findings were positive, the process of involution seemed to be confined to the follicles

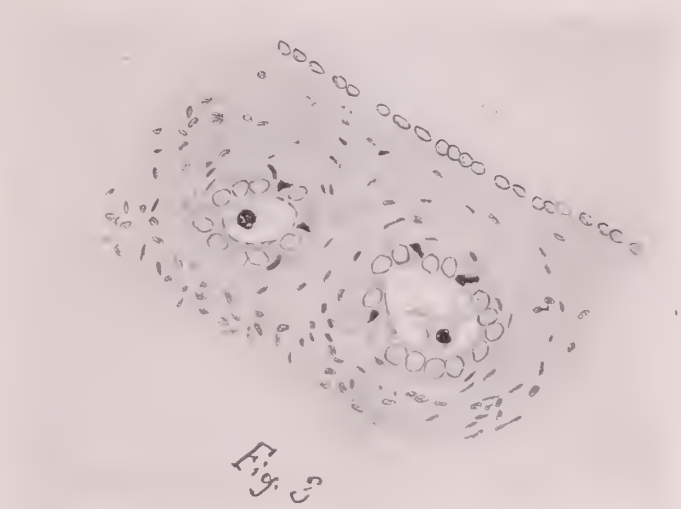

Fig 3. Cortical segment of ovary with two primary involutive follicles; cloudy swelling of follicular epithelium, vacuolization of the ooplasm and pigmentation of germinative vesicle; from a bitch subjected to bilateral destruction of the occipital lobes and killed 44 days later. X 500 diam. Alum hematoxylin.

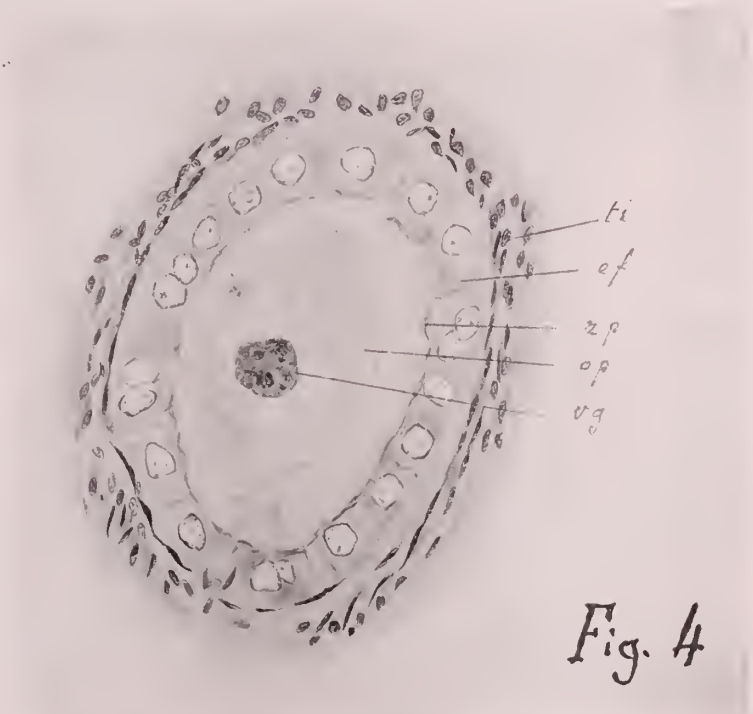

Fig. 4. Ovarian follicle in growth with cloudy swelling of the epithelium; *ef*, atrophy of the zona pellucida; *zp*, vacuolization of the ooplasm; *op*, pigmentation of germinative vesicle; *vg*, of same animal as in Fig. 3. X 500 diam. Alum hematoxylin.

in the greatest state of growth, although the primary follicles were frequently involved. In these cases the lesions were less severe than in the others but more marked than in the ovules.

The rarefaction of the ooplasm reached its highest grade in the germinative vesicles although they retained their size and natural round form. Their plasm was entirely unstained and the chromosomes generally reduced to fine dust or short, slender, broken up filaments, disposed either at the periphery in the form of a halo, or at one pole, or uniformly disseminated in the cytoplasm giving to the vesicle a fine, granular aspect which could easily be confounded with the ooplasm surrounding it.

The folicular epithelium was neither cloudy nor in chromatolysis, as in the preceding cases, but simply lightly staining and poor in protoplasmic and chromatin granules. Many of the cells were clearly atrophic and in pigmentosis. The fluid of the Graafian follicles was always scantier than in normal conditions. We will see further on what interpretation may be construed from the findings in these animals.

No other changes of importance were present in the ovaries of these animals which, except for the parenchymal changes described above, could not be distinguished from those of the controls.

In the final group of experiments there were 5 bitches. These were operated upon as in the preceding experiments and were killed 60 to 106 days afterwards. The findings were negative.

Summary and Considerations.—The animals that died a few days after operation showed no appreciable structural modifications in the ovaries to distinguish them from those of controls.

It was only after the twelfth or thirteenth day after operation that the first evident signs of a characteristic functional disturbance of the ovarian parenchyma could be found. They were of a subacute character confined almost exclusively to the germinative vesicle of some of the ovules nearest maturity. The cytoplasm appeared slightly cloudy and the chromosomes were in a state of incipient disintegration.

At a later period, when the animals had completely recovered from the trauma, marked changes were present in the ovarian parenchyma, indicating a serious disturbance in the hereditary biological processes, but which did not assume a clearly degenerative character. These changes were usually characterized by a simple process of involution which affected in great part the ovarian follicles, especially those in a condition of greatest growth.

In the first period of 24 to 44 days the germinative vesicles appeared atrophied and in complete pigmentosis with marked disintegration of the chromosomes and vacuolization of the nucleoli. In the more advanced phase (45 to 85 days) the germinative vesicle, though conserving its size and round form, showed entire colorlessness of its cytoplasm, while the chromosomes were reduced to a fine dust forming well defined particles, which recalled to mind microsomes of the natural phase in *synapsis*. The ooplasm in these forms appeared in diverse degrees of rarefaction in direct proportion with the greater survival of the animal.

The epithelium, especially of the more evoluted follicles, during the first period showed cloudiness, accompanied by chromatolysis; at a later stage it was paler and poor in protoplasmic and chromatin granules.

These involutive phenomena vary from case to case without showing any relation to the severity of the lesion or to the physiologic nature of the region of the cerebral cortex destroyed. What was absent in all the cases, even those under longest observation, was proof of the complete destruction of the ovules undergoing involution, but data was not lacking pointing to their anatomic and functional *restitution*.

What is the pathogenetic significance of these findings?

The nature of the changes which can be said to characterize simple atrophy, their

diffusion through the greater part of the ovarian parenchyma, as well as their uniformity in all the cases, varying only in degree in proportion to the duration of the trauma, and also the absence of degenerative processes, are sufficient evidence to exclude any accidental factors in the findings. They constitute a complex which I have already described in birds as symptoms of *visceral shock* following cerebral trauma; in the present cases they need not be differently interpreted—so to say, as an immediate consequence of a grave tropho-dynamic disturbance by repercussion of the trauma on the sexual glands.

Contrary to what happens in birds the process of involution of the ovaries in mammals immediately following cerebral trauma, is limited, it may be said, exclusively to changes representing simple atrophy. Degenerative changes and circulatory changes (endo- and peri-follicular hemorrhage) are absent in mammals but frequent in birds leading to rapid, complete destruction of some of the ovules, especially of the maturer ones. That is not to infer that the ovaries in birds are more sensitive than in mammals, but the severe phenomena of degeneration accompanying simple involution of the

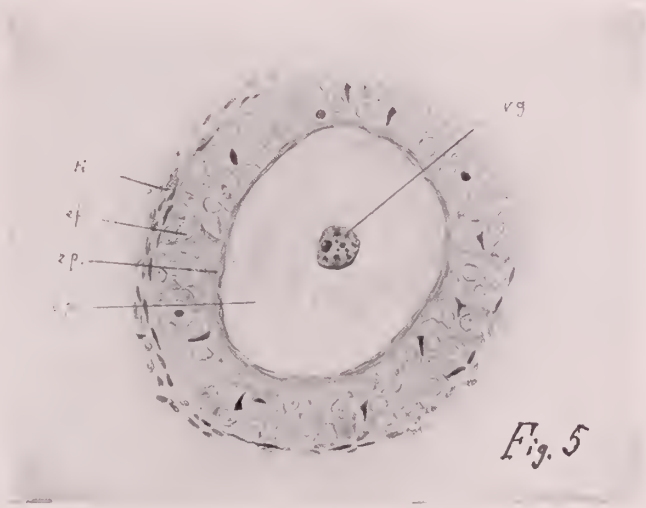

Fig. 5. Ovarian follicle in more advanced growth than the preceding; *ef*, cloudy follicular epithelium; *zp*, zona pellucida, atrophied and fibrous; *op*, ooplasm, vacuolized and rarified; *vg*, germinative vesicle showing atrophy and pigmentosis. From same animal as Fig 3; same magnification and same stain.

ovaries in birds should be interpreted as nothing more or less than secondary changes, as true complications due to the peculiarity of structure of the ovary in this species which have no dèmonstrable value concerning the degree of functional correlation between the brain and the organ of procreation. The greater metabolic activity of the ovary in birds, especially during the annual phase of ovulation and the enormous size that the ovules attain in these animals are more than sufficient to explain the degenerative changes and the circulatory disturbances that accompany atrophy of the ovary. Only the characters of the ovarian parenchymal changes in involution are to be considered in determining the degree of functional relation between the brain and this organ.

In fact if we take account of the relations between cause and effect we can only reach an opposite deduction concerning this functional relationship in the two species of animals. The fact that the findings in bitches subjected to partial lesions of the

brain are in their nature, severity and extent not of an inferior degree than those in hens and pigeons subjected to similar lesions goes to prove that in reality the ovaries in higher mammals are more sensitive to cerebral trauma than in birds and that the relations between the traumatized centers and the ovaries are more intimate in the former than in the latter. For instance, the greater duration of the phenomena of visceral *shock* in bitches than in pigeons and hens—phenomena that develop completely independently of the gravity of the trauma and of the general condition of the animal and which can only be interpreted as a consequence of a greater sensitivity of the organ to the trauma, in virtue of which the effects of repercussion on the peripheral organ are protracted over a longer period the more intimate the inhibitory influence exercised by the central nervous system on the viscera.

We must therefore maintain also that the dynamic correlations between the brain and the female sexual gland, analogously to what I have demonstrated in the male sexual gland, are in direct proportion to the degree of evolution of the animal.

I stated previously that we have not sufficient data to affirm that the ovule suffering an atrophic process can undergo complete destruction by follicular atresia or by processes of degeneration. That does not absolutely exclude the possibility of destruction of the ovule. Such destruction may perhaps occur, but we can only say that it is an exceptional thing and that it has escaped our observation.

On the other hand, we may admit that the ovules undergo a true process of anatomical and functional re-integration, the abnormal conditions being temporary only. The nature of the lesions, especially in the animals under longest observation, excludes the likelihood of an irreparable and destructive process. Such may suspiciously exist in the ovarian parenchymal changes found 30 to 40 days after the cerebral trauma—that is to say, simple atrophic processes of the ovarian follicles accompanied by diminution and pigmentosis of the germinal vesicle, but without any evidence of degeneration. This is not sustained by the changes in the parenchyma found at successive periods.

To refer to the findings in the 6 bitches in which the conditions were almost normal in the epithelium as well as in the follicles in a more advanced state of growth, but clearly abnormal in the ovules, thus indicating a sharp contrast. This contrast was apparent only, the abnormal findings in the ovules being open to interpretation as simple functional disturbance of the cells; this would certainly not exclude the possibility of reparation. The ooplasm, indeed, showed a process of simple atrophy, easily demonstrable and characterized by a state of rarefaction without any degeneration. The germinal vesicle, which retained its form and size, did not show serious changes, but its contents, especially the chromosomes, although showing changes which might be regarded as due to chemical changes within the cell cannot be considered as proof of a progressive and irreparable pathologic condition. What we are dealing with is a simple disintegration of the chromatin elements which have lost their normal form and seem reduced to fine particles greatly resembling the physiologic phase in *synapsis*. This must not be confused with pigmentosis of the vesicle nor interpreted as a degeneration. The disintegration of the chromosomes is rather a chromatolytic phenomenon and may be regarded as the effect of a disorientation of the components of the chromosomes—a disorientation of the microsomes which, following marked nutritional disturbances of the cell, become separated and assume the characteristic arrangement described above (accumulation at one pole of the vesicle, disposition towards the periphery or uniform distribution in the cytoplasm) as happens in natural *synapsis* preceding the coupling of the chromosomes. In time, with the re-establishment of the chemical equilibrium of the cell, these microsomes may recover their normal orientation in the plasma and become reunited into chromosomes, as in normal conditions.

It may therefore be argued that the cerebral trauma in these cases has caused an

arrest of evolution of the ovule at a certain phase, the phase of *synapsis*, which, as we know, constitutes the more critical phenomenon of mitotic division.

This interpretation, which is strengthened by the almost normal conditions of the follicular epithelium and is analogous to the effects already described by me as following cerebral commotion on the male sexual glands in dogs, is not the only one that may give rise to numerous ovules in *synapsis*. It is not improbable that a simple arrest of the ovules at a definite phase of their physiologic evolution may be followed by a process of re-integration of the parenchymal elements that were affected by the atrophy and pigmentosis. The metabolic equilibrium of the ovarian follicles becoming re-established in time, the germinal vesicle recovers its form and size and at the same time the elements composing its contents return to the *stato quo ante*. The chromatin substance which in consequence of a process of autolysis caused by the cerebral trauma were homogeneously distributed through the atrophic cytoplasm, recover their power of organization to again take the form of chromosomes. The granular appearance of these ovules thus represent a prime phase in the process of differentiation of the chromo-

Fig. 6

somes in renewing their natural anatomic and physiologic characters. The chromatin granules of this phase of regeneration of the ovules seem always to be destined for the re-composition of the chromosomes. I believe, therefore, that the granular state of the chromatin following the process of reorganization may always be considered as a true synaptic form, no matter what its origin.

It is a singular fact that these transition forms producing the phenomenon of *synapsis*, are more prevalently found in animals under longer observation after the trauma; while in those killed or that died in the first period after the trauma in involutive forms predominate, that is to say, the ovules show atrophy and pigmentosis of the germinal vesicle. Cases occur, however, in which those forms with atrophy and pigmentosis of the germinal vesicle are intermixed with those in *synapsis*. At any rate, whatever interpretation may be given to the latter forms the fact remains that they only represent a grave metabolic change of the ovule which must be considered as the effect of a simple functional disturbance capable of anatomic re-integration.

Naturally, also, the chemical changes in the ovule following cerebral trauma richly be transmitted deleteriously through the hereditary biological processes on the offspring.

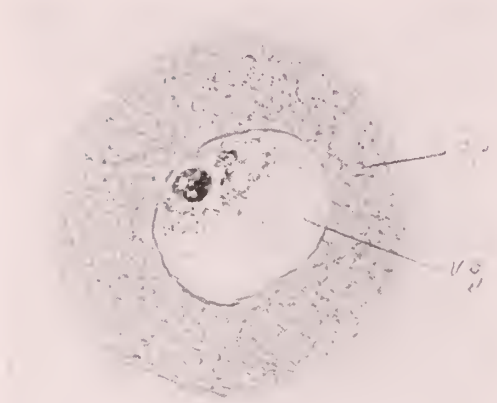

Fig. 7

Fig. 8

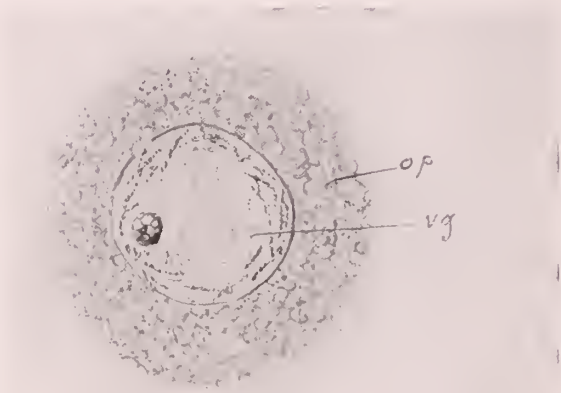

Fig. 9

Figs. 7, 8 and 9. Oocytes in state of growth with ooplasm showing rarefaction; nucleolus of germinative vesicle vacuolated; chromosomes disintegrated and variously distributed in the cytoplasm (fibrillapsis): Fig. 7, concentrated in one pole; Fig. 8, uniformly disseminated; Fig. 9, distributed at the periphery. From a bitch subjected to partial and bilateral destruction of the frontal lobes and killed 54 days later. X 900 diam. Iron hematoxylin.

It is not likely that a cell of such complexity, after such marked metabolic disturbance, will respond normally to the natural laws governing the perpetuation of the species.

The possibility of a re-integration of the ovule in mammals is based not only on indirect deductions and analogous phenomena observed in birds, but also on direct proof. Such, for instance, the negative findings in the bitches under longest observation in which, as we have seen, the ovarian follicles were in various states of growth and in perfect normal condition. This was the rule and not the exception, as in the preceding cases. Two hypotheses may be advanced to explain these findings: either these animals show a peculiar individual resistance to trauma or that they had undergone a true regeneration of the organ by formation of new parenchymal elements in substitution of those destroyed. Neither of these two interpretations is, however, acceptable for it is hard to understand how the peculiar resistance can be limited to one group of animals and on the other hand it is hard to understand how numerous parenchymal elements can disappear and regenerate in so short a time without leaving any traces

Whatever be the fate of the ovules, it must be admitted as a rule that in mammals. just as in birds, they undergo anatomical and functional *restitution.* More eloquent proof of this is to be seen in the bitch subjected in two stages to total and bilateral destruction of the dorsal surface of the cerebral hemispheres and killed, while in the best of general condition, seven months later. In this case the findings were entirely negative as in the five preceding animals subjected to partial lesions.

Just a word as to the value that the observations have on the complex question which the anterior brain exercises on the biological processes of procreation. In former works and in a more recent article* on the importance of my researches in the physiopathological field of hereditary phenomena to the findings in the male and female sexual glands of animals subjected to cerebral mutilization and the nefarious influence that these cerebral lesions exercise on the offspring, I demonstrated that in higher vertebrates there are spinal centers as well as more evoluted, more differentiated centers diffused through the cerebral cortex that participate in the genetic functions. The inferior centers regulate the trophic functions of these organs while the higher centers are concerned more directly with the more mysterious functions of procreation, exercising upon them an inhibitory power which serves to co-ordinate the metabolic processes of the genetic glands and the various physiological laws respecting the periodicity of the various sexual phenomena —the procreative potentiality of the individual, the multiplication and the evolution towards maturity of the male and female germinal elements, conservation of the power or reproduction and perpetuation of the species. These higher visceral centers are in intimate correlation with the psychic centers which exercise upon them a continuous and direct stimulating action, assuming in man, either by deficiency or by excess, an importance of the first order as a cause of degeneration.

The ovarian findings in the investigations discussed above, although confined to immediate phenomena of cerebral trauma, constitute another proof of the intimate functional relations between the brain and the organs of procreation. They show the great sensitiveness of the ovaries to cerebral trauma in more evoluted animals as well as the gravity and duration of the deleterious effects of the trauma on the hereditary biological processes, independent of the physiological nature of the part if the brain traumatized and independent of the organic and psychic conditions of the animal. All of which again brings to the attention of eugenists the correlation between the brain and the organs of procreation and the importance of this to the human race.

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*Cervello e funzione genetica. Vecchie e nuove ricerche e considerazioni sulle influenze psichiche, *Riv. di Pat. Nerv. e Ment.*, XXII, 1917.

The brain and genetic function. *Urologic and Cutaneous Rev.*, Oct., 1917.

Conclusions.

1. In higher mammals the immediate changes in the ovarian parenchyma following cerebral lesions are analogous to those observed in birds and may be considered an expression of a grave visceral *shock*.

2. The parenchymal changes are usually represented by processes of simple involution which more prevalently affect the ovarian follicles in a state of greatest growth. The ovule shows the greatest amount of change characterized by simple atrophy accompanied by a state of pigmentosis of the germinal vesicle or a state of disintegration of the chromosomes very analogous to the physiologic phase of *synapsis*.

3. The symptoms of visceral *shock* in bitches usually come on slowly when the animal has nearly or entirely recovered from the trauma and persist for two or three months. Afterwards the ova, even in cases of complete destruction of the cerebral cortex, regain apparently their normal structure and activity, in virtue of a process of re-integration, anatomic and functional, of the pre-existing follicles.

4. The effects of repercussion of the cerebral trauma on the ova vary from subject to subject. There is no relation between the physiologic nature of the part of the cerebral cortex traumatized and the ovarian changes, which seem to proceed independently of the general condition of the animal.

BIBLIOGRAPHY.

Ceni: *L'influenza dei centri corticali sui fenomeni delle generazione e della perpetuazione della specie.* *Arch. Ital. de Biologie*, XLVIII, 1907.
Sugli intimi rapporti funzionali tra cervello e testicoli. *Ibid.*, XLIX, 1908.
L'influenza del cervello sullo sviluppo e sulla funzione degli organi sessuali maschili. *Rev. Sper. di Fren.*, XXXV, 1909.
L'influenza del cervello sulla funzione del parenchima ovarico e sui suoi processi di distruzione. *Pathologica*, III, No. 58, 1911.
Il cervello e la funzione ovarica. *Riv. Sperimentale di Freniatria*, XXXVIII, 2, 1912.
Spermatogenesi aberrante consecutiva a commozione cerebrale. *Arch. f. Entwickelungs mechanik der Organe*, XXXVIII, 1, 1913.
L'involuzione degli organi genitali maschili nella commozione cerebrale. Nota preventiva. *Pathologica*, No. 127, 1914.
Die Genitalzentren bei Gehirnerschütterung. *Arch. f. Entwickelungsmechanik des Organismus,* *Die höheren Genitalzentren bei Gehirnerschütterung.* *Zeitschr. f. Sexualwissenschaft*, I, No. 7, 1914.
La commozione cerebrale e gli organi genitali maschili. *Riv. Sperimentale di Freniatria*, XL No. 4, 1914.
The influence of cerebral excitation on the male sexual glands. *Urologic and Cutaneous Review*, January, 1915.
Cervello e funzione genetica. *Vecchie e nuove ricerche e considerazioni sullen influenze psichiche.* *Riv. Patol. Nervosa e Mentale*, XXII, 5 and 6, 1917.
The brain and genetic function. *Urologic and Cutaneous Review*, October, 1917.

RECENT ADVANCES IN NEUROLOGICAL SURGERY AND ESPECIALLY IN THE DIAGNOSIS AND TREATMENT OF BRAIN INJURIES.

By

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THE field of neurological surgery has so broadened during the past fifteen years as the result of the pioneer work of Horsley, Von Eiselberg and Krause, and in this country of Cushing, that a number of neurological conditions, which were formerly considered hopeless, are now amenable to improvement at least, and in some early cases even a cure may be expected. This advance has been due chiefly to earlier diagnosis, an improved surgical technique and surgical judgment, and to better team work between the surgeon and the neurologist.

Earlier diagnosis of many intracranial conditions is now possible mainly as the result of the more general and intelligent use of the ophthalmoscope; it is now commonly recognized and appreciated that the condition of marked papilloedema and "choked discs" is the end-result of pre-existing pressure signs observable in the fundus of the eye.* No longer is it necessary to wait until a measurable papilloedema occurs before it can be definitely stated that an increase of the intracranial pressure is present; besides the early fundal signs ascertainable by an ophthalmoscopic examination, the most accurate and definite test of an increase of the intracranial pressure is the lumbar puncture using the spinal mercurial manometer; in this manner the ophthalmoscopic findings can be confirmed. Intracranial localization has been greatly facilitated by the most thorough neurological examinations, and yet in many cases the localizing signs are so obscured by the increased intracranial pressure that they can be easily overlooked and they may even be absent; the importance of examining these patients early is obvious. No patient should be allowed to develop a secondary optic atrophy and its resulting blindness while an effort is being made to localize the condition—an unimportant consideration in many cases; an early cranial decompression will save the eye-sight and frequently the lesion can be localized later. X-rays are of much assistance in the diagnosis of many cranial and spinal lesions; by this means, long-continued intracranial pressure signs may also be determined and frequently the site of the lesion indicated; a negative picture especially of the skull, however, means nothing and frequently the interpretation of apparently positive plates is most difficult and at times confusing. Naturally in cranial and spinal injuries, the value of the X-rays is very great indeed especially regarding accurate diagnosis, and yet the treatment of such conditions, particularly of brain injuries, depends upon the presence or not of an increased intracranial pressure, whether the skull itself is fractured or not; whereas in spinal injuries, the chief concern is whether the spinal cord has been irreparably damaged or not—the spinal fracture being of little importance neurologically so far as the treatment is concerned unless the vertebral dislocation is so great that the spinal cord must have lost its continuity.

An improved surgical technique especially regarding the team-work between opera-

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tor and assistants, has been a large factor in lowering the mortality of neurological operations; not only in the rapid loss of blood avoided, the duration of the operation lessened and thereby the shock minimized, but the risk of infection is also proportionately diminished to a point practically nil. Naturally, intracranial operations should not be hurriedly done, but they can be quickly and at the same time smoothly and safely performed; there is surely no advantage to be obtained in prolonging the operation either on account of faulty technique or as a result of such a complicated technique that the final closure of the wound is delayed many minutes. It is rarely necessary for the team to consist of more than the operator, two assistants and a nurse; the anesthetist is a most important member and many disasters in cerebral surgery have been due to faulty anesthesia.

The third important factor in the progress of neurological surgery during the past decade has been due to a better understanding of the neurological condition at operation both by the surgeon and the neurologist at his side. Formerly, the surgeon knew little if any neurology, and the neurologist knew little if any surgery; the result was poor teamwork and thus frequently the surgical judgment was not the best. Today the surgeon should have at least a practical knowledge of neurological principles—both anatomically and physiologically; naturally, a training in neurological pathology is most essential. In this manner a number of mistakes in surgical judgment may be avoided; if the patient cannot be benefited, by no means make the condition worse by an operation.

One of the most important aids to an increased knowledge of neurological lesions, particularly of the brain and of the spinal cord, has been the observation of the living pathology at operation, and if death should occur, then the careful study of the tissue itself at autopsy. During the past three years, a permission for autopsy has been obtained before operation in each case of neurological surgery (both ward and private patients)—no operation being performed unless the permission is given in writing—so that if a death should occur, then we shall ascertain the cause of death, and also the accuracy of the diagnosis and the treatment for the benefit of future patients. Naturally, when an operation is advised, it is in the belief that the patient will not die, but if the patient should die, then it is absolutely essential for the benefit of other patients that we ascertain the cause of death in order that possible similar mistakes at least may be avoided. I know of no means so enlightening to the doctor regarding the accuracy of diagnosis, particularly of intracranial conditions, than the post-mortem examination; besides the benefit of such knowledge to one's future patients, there is a marked tendency for these examinations to make the doctor humble as to his real knowledge and to keep him in that mental attitude.

If neurological surgery consisted chiefly in the removal of brain tumors it would be indeed a most discouraging field of endeavor. As you know, almost 80 per cent. of tumors of the brain are malignant and even though a surgically successful removal of the tumor is possible, yet the end-results are the same—the pitiful condition of the patient is merely prolonged; the severe headaches, however, and the impairment of vision are thus temporarily relieved and even prevented by an early operative removal of the tumor. No patient should be allowed to become impaired visually from the increased intracranial pressure due to the growth of an intracranial tumor merely because the tumor cannot be located. These patients all should have an early decompression to relieve this increased intracranial pressure so that the vision will be spared, and then if the tumor does locate itself, a successful removal of the tumor may be possible and yet the patient is not blind; I wish to emphasize this point as it is most discouraging to operate upon these cases of brain tumor who have become blind.

Tumors of the spinal cord, on the contrary, are much more favorable in that there is less liability of their being malignant; they can be more accurately located and are much more accessible surgically. The operation of laminectomy has become much less formidable within the past few years so that an exploratory laminectomy of

a suspected spinal cord tumor should always be advocated early in order to anticipate any permanent damage of a compression transverse myelitis. The frequency of dural tumors of the spinal cord is most hopeful.

The condition of brain abscess has always been a most grave one. It usually results from an otitis media with its subsequent involvement of the mastoid; the usual site is the contiguous tempero-sphenoidal lobe, and less frequently the adjacent cerebellar lobe. As lesions of the cerebellum can be much more accurately diagnosed than those of the tempero-sphenoidal lobe, therefore, if we can rule out a cerebellar abscess, then the site must be the tempero-sphenoidal lobe—a comparatively silent area of the brain, especially the right lobe in right-handed patients. Formerly the otologists in cases of suspected abscess of the tempero-sphenoidal lobe would puncture the dura in search of the abscess through the "dirty" infected field of the mastoid; as all operations for brain abscess are really exploratory procedures, it is distinctly unsurgical to open the clean subdural spaces and to puncture the cerebral cortex itself through an infected area; if the abscess is not located (and this frequently happens), then the patient runs the great risk of a resulting meningitis and thus the usual occurrence—the excitus of the patient. Besides, the dura should not be punctured blindly with a knife or puncture needle unless the dura has been opened so that it can be clearly ascertained whether an underlying cortical vessel is present or not; many disasters from the resulting hemorrhage have frequently occurred from such procedures It is much more rational surgically and a much better exposure is obtained to locate the abscess if the operative incision is made through the "clean" sub-temporal area, just as in a sub-temporal decompression—the vertical incision naturally being used; if the abscess is found, then it can be satisfactorily drained through the lower angle of the incision at the base of the skull; and if the abscess is not found then at least a decompression has been performed so that the intracranial pressure is relieved until the abscess may locate itself clinically, and the great danger of a meningitis and infective meningo-encephalitis has been avoided. In my series of brain abscess cases there are a number of them which I am sure I should have missed surgically if I had not used the better exposure of the sub-temporal route.*

The condition of cerebral spastic paralysis occurring in children is a most interesting study. In 1843, Mr. Little, of London, in his first monograph upon this subject, stated that these cases were due to a lack of development of the cerebral tissues and also to an earlier meningitis; he did mention, however, that this condition apparently followed in some cases of difficult and prolonged labor with or without the use of instruments, and were undoubtedly, in his opinion, due to an intracranial hemorrhage; it is very interesting to note that in his second monograph upon this subject nineteen years later, in 1862, he states that, in his opinion, three-fourths of these cases of cerebral spastic paralysis in children are due to hemorrhage. These observations have been confirmed recently by more modern methods of diagnosis; it was formerly believed that hemorrhage in these cases caused a primary destruction of brain tissues, therefore no regeneration was possible and thus an operative procedure would be of no value in treating the condition. Within the last five years I have had the opportunity of examining and treating personally almost 1,400 children having the condition of spastic paralysis.** By the more accurate methods of differentiating the ones due to hemorrhage from those hopeless cases due to a lack of development and to a former meningo-encephalitis for which nothing really can be done, it is now possible to diagnose the ones due to hemorrhage from these two conditions by means of careful ophthalmoscopic examinations of the fundi of the eyes and by a measurement of the pressure of the cerebro-spinal fluid at lumbar puncture by means of a spinal mercurial manometer; if the ophthalmo-

New York State Journal of Medicine, October, 1916.
**The Laryngoscope*, St. Louis, March, 1914.

scope reveals the signs of a definite increase of the intracranial pressure and those observations are confirmed by the spinal mercurial manometer (the normal pressure of the cerebrospinal fluid being 5 to 9 mm.), then we have an increased intracranial pressure and if this pressure is relieved permanently by a sub-temporal decompression and its modifications according to the condition of the underlying cortex as ascertained at operation, then a definite improvement results in these cases, both physically and mentally. In this series of almost 1,400 cases there was an increased intracranial pressure in about 20 per cent. of them, that is, in about one out of every five cases examined, and these are the ones and the only ones that can be benefited by an operative procedure. I have now operated upon 298 of these children with a mortality of 28 patients (that is 9 plus per cent.) and the results have been very encouraging; naturally, the younger the child, the better the prognosis—the first few days of life being the ideal time for the operation, although most of the children have been between four and six years of age; the oldest patient, however, was 23 years of age and a slight improvement resulted. Naturally, a sufficient period of time has not yet elapsed for us to ascertain the ultimate condition of these patients following operation, but their improvement has been so uniform and continuous in the younger children, and since the pathology of the condition was found to be a hemorrhage *upon* the cerebral cortex and not *in* the cortex itself (in only 16 cases was the hemorrhage in the cortex or beneath the cortex), both the physical and mental impairments were merely the secondary results of the increased intracranial pressure due to this supracortical hemorrhage.

The condition of hydrocephalus has been a very interesting one in that it has now been ascertained that the type of internal hydrocephalus is comparatively infrequent and that the type of external hydrocephalus is the usual condition in those cases. They both result from an earlier meningitis (if we exclude those cases of internal hydrocephalus due to tumor formation at the base), therefore the condition is a diffuse one; if the ventricles are blocked by adhesions or exudate in the aqueduct of Sylvius or at the foramina of Majendie and Luschka, then an internal hydrocephalus occurs, but if no such blockage is present, we shall have produced an external hydrocephalus because the cerebrospinal fluid cannot escape from the cerebrospinal canal through the blocked stomata of exit in the cortical veins, sinuses and lymphatics. The methods in the past, and occasionally now advocated, of connecting the ventricles with the subdural spaces by means of tubes, are therefore of little or no value in the treatment of this condition; even though the lumen of the tube should remain patent (and it rarely does) and even if the condition is one of external hydrocephalus (which is much more rare than of internal hydrocephalus), such an operative procedure will merely be changing the condition of internal hydrocephalus to one of external hydrocephalus and therefore little or no improvement can be expected. The method recently used for draining the ventricles in cases of internal hydrocephalus and of draining the subarachnoid and subdural spaces in cases of external hydrocephalus by means of linen strands, is a much more rational procedure surgically than any of the methods used in the past and its results have been very satisfactory; in the last report of 41 cases the mortality had been only thirteen patients.*

The condition of brachial plexus injury causing the so-called brachial birth palsy is the result of trauma to the plexus due to an over-stretching of its nerves by a forceful separation of the head from the shoulder at birth. Undoubtedly if the plexus has not been completely severed, then many patients recover from the temporary paralysis of the arm, but in those children where the over-stretching has been so severe and even to a point of a loss of continuity of the nerve fibers, then a permanent paralysis of more or less degree will result unless the scar tissue resulting from the hemorrhage in and about the plexus is removed and the ends of the torn nerves are anastomosed by an

*American Journal of the Medical Sciences, April, 1917.

operation. If the arm is completely paralyzed at birth so that not even the upper arm or the fingers can be moved, then the ideal time for the operation is at one month of age (no anesthesia being necessary); if, however, the fingers or the upper arm can be moved slightly at birth, then we should wait until three months of age, and if no marked improvement has occurred within this time, then the operation should be performed. In these children I usually have the mother bring the child to the hospital in the morning, operate upon it, and then have the child taken home in the afternoon. The operation in not a difficult one technically, and there has been no mortality in a series of 104 cases.* These patients should not be allowed to reach the age of six years and even older without an attempt being made to improve their condition by an operation; the best results have been obtained in children under one year of age.

In fractures of the spinal column, I feel that unless we can prove absolutely that there is a complete severance of the spinal cord or that the spinal cord has been irreparably contused, that we should give the patient the benefit of an exploratory laminectomy within a short time after the accident in order to remove any bony compression, hemorrhage or oedema of the spinal cord, and thus increase the patient's chances of a greater ultimate recovery of function. Frequently patients whom we consider to have suffered a complete severance of the spinal cord beneath the site of the injury, with complete loss of sensation and motion, begin to recover their sensation and motion in the extremities formerly completely impaired after three months, six months and even longer; these patients are the ones upon whom an early laminectomy should have been performed, since the ultimate improvement would have been much greater than can be obtained at the later dates. The operation of laminectomy is no longer the formidable operation of the past and its use should be much more frequently advocated than at present; these patients are most pitiful ones—the end-result, unless something can be done for them, being but a miserable existence of a few years.

The diagnosis and treatment of brain injuries has advanced most rapidly within the last few years. The clinical symptoms and signs are so varied and frequently so confusing in these patients that it is a most fascinating field; apparently in many cases the more extensive the fracture of the skull, the less seriously is the brain injured, and on the contrary, the most dangerous of brain injuries are frequently not even associated with a fracture of the skull. As is well known, the fracture in these cases (if we exclude depressed fractures of the vault which should always be elevated or removed) is possibly the most unimportant part to be considered in the treatment; whereas the presence of a marked increase of the intracranial pressure, with or without a fracture of the skull, should immediately cause the patient to be withdrawn from that large group of patients properly treated by the expectant palliative method, and the advisability of an early operative procedure to relieve the increased intracranial pressure should be considered.

During the three years, 1913, 1914 and 1915,** I examined and treated personally 239 adult patients having acute brain injuries, with or without a fracture of the skull; in only 79 of these 239 patients (that is, 34 per cent.) were there marked signs of an increased intracranial pressure, and therefore only these patients were operated upon to relieve this increased pressure, whereas the remaining 160 patients did not show definite signs of an increased intracranial pressure and were therefore treated by the expectant palliative methods of absolute quiet, ice helmet and catharsis; if in shock, then the routine treatment of shock. It is thus seen that only one-third of the patients having brain injuries, with or without a fracture of the skull, were operated upon, and approximately this same ratio has continued during the past year. This careful selection of patients for operation, and, if indicated, the type of cranial operation used, together

Journal of the American Medical Association, March 18, 1915.
**Journal of American Medical Association*, May 13, 1916.

with the most important factor, viz., the ideal time for performing the operation, have made it possible to lower the mortality of fractures of the skull from the average of 50 per cent. of most hospitals to 30.7 per cent. at the Polyclinic Hospital, and if we include the moribund patients dying within three hours after admission to the hospital from shock or internal injuries, and the many cases in which fracture of the skull was but an incident in the patient's general condition, the mortality is lowered to only 19 per cent.

In the treatment of brain injuries, with or without fractures of the skull, if the patient is allowed to develop definite paralysis, a lowered pulse-rate, Cheyne-Stokes respiration and pulse and that appalling group of extreme intracranial pressure signs, then I agree entirely with the opinion so commonly now held that these patients "get along" just as well without operation as with operation at this late stage—the mortality being 50 per cent. and over; but the patients with brain injuries should not be allowed to reach this dangerous stage of medullary compression due to the high intracranial pressure—it should be anticipated by accurate diagnostic methods now known and if a marked increase of intracranial pressure is ascertained, then an early relief of it should be advised, not only to save the life of the patient but to lessen the post-traumatic conditions of changed personality either of the excitable or the depressed type, persistent headaches, early fatigue, occasionally epilepsy and that long train of post traumatic conditions in brain injuries and due, in the majority of cases, to a prolonged increase of this intracranial pressure.

Besides the lowered pulse rate and disturbances of respiration, namely, lower rate, irregular and the Cheyne-Stokes type, which are comparatively crude signs of intracranial pressure, and other late signs of extreme intracranial pressure with its resulting medullary compression, the two most valuable precedures for determining a definite increase of the intracranial pressure are the examinations of the fundi of the eyes with the ophthalmoscope and the measurement of the pressure of the cerebrospinal fluid at lumbar puncture by means of the spinal mercurial manometer.

Although it is rare for a measurable papilloedema and "choked discs" to occur in these cases of traumatic intracranial lesions, with or without a fracture of the skull, yet the earlier and therefore milder degrees of an oedema of the optic discs should be most carefully "watched for," as it is one of the accurate signs of the pressure or absence of a definite increase of the intracranial pressure; ophthalmoscopy, especially the direct method, is a most valuable means of diagnosing cranial lesions. Rarely do these fundal examinations reveal an increased intracranial pressure within six hours after the head injury; this is due to the presence of shock in these patients who later exhibit the marked signs of intracranial pressure. As head injuries are usually accompanied by shock of varying degrees, naturally in these cases the blood pressure is low so that even if a large intracranial vessel was torn, there could be only a comparatively small amount of hemorrhage because the increased intracranial pressure would soon be greater than this lowered blood pressure of shock, and therefore the bleeding would cease; however, as the patient recovers from the condition of extreme shock, the blood pressure rises when more bleeding may occur until the intracranial pressure again equals the lowered blood pressure; finally, if the patient survive this condition of shock, then the blood pressure would be continuously greater than the intracranial pressure, so that this resulting increased intracranial pressure would produce its characteristic signs in the fundus of the eye—a dilatation of the retinal veins, and an oedematous blurring of the nasal halves, and if still higher, then an oedematous obscuration of the temporal halves of the optic discs A measurable papilloedema and "choked discs" occur in these cases only when the intracranial pressure is extreme, due to a large intracranial hemorrhage of slow formation, such as the extradural middle meningeal type, as in brain tumors or when the ventricles are blocked, producing an internal hydrocephalus. Naturally, if the intracranial hemorrhage forms very rapidly and is of large amount,

the patient usually dies within a couple of hours, so that "choked discs" have very little time to be produced; again, the shock following head injuries usually lasts for about six hours in the patients who survive and therefore it is rare within these first six hours for the ophthalmoscope to reveal definite signs of an increased intracranial pressure. It may be also noted that the patients who do not survive the condition of shock, usually die within the first six hours. It is therefore of the greatest importance to recognize these early signs of increased intracranial pressure by repeated ophthalmoscopic examinations and to realize that these oedematous blurrings of the optic discs are more than being merely within physiological limits; it is true that in cases of myopia there is normally an obscuration of the disc outlines, but these patients can be excluded by the second and following test which should always be performed.

The most accurate means now known for ascertaining the presence or absence of an increased intracranial pressure is the measurement of the cerbrospinal fluid at lumbar puncture by the spinal mercurial manometer. It is similar to a blood pressure apparatus, as safe as a lumbar puncture when properly performed, and by it the varying degrees of intracranial pressure can be carefully recorded. The normal pressure is 5—9 mm. of mercury, so that if a pressure higher than 15 mm. is obtained at lumbar puncture, then we know that the signs of intracranial pressure, as shown in the fundus of the eye, are confirmed. This method of estimating intracranial pressure is most important in the differentiation of the intracranial condition of spastic paralysis due to hemorrhage at birth from those other causes of the so-called Little's disease. In other intracranial conditions producing the extreme stages of papilloedema and "choked discs," and even their end-results of secondary optic atrophy, as in neglected cases of brain tumor, naturally it is not necessary to confirm the ophthalmoscopic findings in order to make a diagnosis of an increased intracranial pressure. If, however, in these traumatic lesions of the brain, we must wait until a "choked disc" results from extreme intracranial pressure in order for us to state the intracranial pressure is high, and if we must wait for the pulse-rate to descend to 60 and below and the respiration and pulse to assume the irregular Cheyne-Stokes character of medullary compression, then undoubtedly the mortality of these patients will be 50 per cent. and even higher. Patients should not be allowed to reach this dangerous stage of medullary compression—this stage should be anticipated, and it can be by repeated ophthalmoscopic examinations and the measurement of the pressure of the cerebrospinal fluid at lumbar puncture.

In selected cases of mild intracranial pressure due to trauma, very frequently the convalescence can be shortened, the headaches relieved and the general condition of the patient greatly improved by lumbar puncture and, if necessary, repeated lumbar punctures; not only will the oedematous "wet" condition of the brain be drained in this way, but a prolongation of the increased pressure be avoided and therefore the definite danger of post-traumatic conditions, so common in these cases, be lessened. Naturally, this method is only applicable to mild selected cases and lumbar puncture should never be advocated as a means of drainage in patients having high intracranial pressure or in subtentorial lesions for fear of a consequent medullary compression in the foramen magnum.

We now come to the most important, and the difficult, question in the treatment of brain injuries with or without a fracture of the skull, viz.: "If an operation is advisable, when should it be performed?" This question can more easily be answered by stating the two periods when the operation should *not* be performed. Naturally, we must exclude the majority (about two-thirds) of fractures of the skull which do not have a definite increase of the intracranial pressure and in which, therefore, no operation is indicated. (The depressed fractures of the vault naturally should always be elevated or removed.)

The two periods in which an operation is distinctly contraindicated in cases of brain injury are, first, the condition of severe shock in the very beginning, and, secondly,

the condition of medullary collapse—the death knell of the patient. A cranial operation upon a patient—no matter how badly the skull is fractured, nor how extensive the intracranial hemorrhage—in the condition of severe shock with a pulse-rate of 120 and higher, takes away whatever chance the patient may have of surviving the shock; the operation is but an added shock and merely hastens the exitus. No patient having a brain injury should be operated upon in this condition of shock; the mortality is most high and if a patient does recover from an operation in this period of extreme shock, then he recovers *in spite of* the operation. Cranial operations for brain injuries in this stage of shock were frequently performed and most disastrously, and thus operations were almost discredited in the treatment of brain injuries. The natural reaction following these early operations in the period of severe shock was to wait until there could be no possible doubt that the patient was gonig to die, unless, as was thought, a cranial operation was performed; that is, the patient was permitted to reach the period of extreme medullary compression—a pulse rate of 50 and below, irregular Cheyne-Stokes respiration and pulse and profound unconsciousness—before a cranial operation might be considered. This is a most dangerous stage for these patients to reach, and it is doubtful whether recovery can occur even with an operation at this period—the mortality being very high. But if the patient has struggled through this period of medullary compression, and finally reaches the stage of medullary oedema, when the pulse-rate begins to ascend quickly to 120 and higher, respirations become rapid and shallow—that is, the stage of medullary collapse, then we have the second period when no patient should be operated upon—they all die, operation or no operation. I feel that if these two extremes can be avoided and the latter of these medullary collapse, can certainly be anticipated in the operative treatment of brain injuries and their signs cannot be overlooked, that the rational treatment from an operative standpoint depends upon the presence or not of a definite increase of the intracranial pressure whether there is a fracture of the skull or not; in some of the most serious cases no fracture was present—either to be ascertained at operation in the operated cases, or at autopsy. The aid of the X-ray is important in the treatment of these traumatic cases only in patients with doubtful depressed fractures of the vault, and in latent fractures of the skull, where the bump is so apparently trivial that the patient might not be so carefully examined and treated as the condition would warrant. On the contrary, no patient with high cranial pressure should be obliged to wait "over night" or for a period of hours merely to secure an X-ray picture of the skull; it is of no importance in the treatment of these acute intracranial lesions whether a fracture is present or not; if there is a high intracranial pressure, as shown by the ophthalmoscopic examination, and by the measurement of the pressure of the cerebrospinal fluid at lumbar puncture by the spinal mercurial manometer, then a cranial operation is indicated to relieve this increased intracranial pressure both by enlarging the intracranial cavity and by the drainage of possible hemorrhage and cerebrospinal fluid; it is not so much a question of removing the hemorrhage as it is of lessening the increased intracranial pressure—whether that pressure is due to hemorrhage or oedema—the operative indication is the same; many cases of head injuries at autopsy have revealed no hemorrhage at all—merely a "wet" oedematous swollen brain, but sufficient to cause medullary compression and the death of the patient.

If an operation is considered advisable to relieve the increased intracranial pressure, then the operation of choice is the subtemporal decompression and drainage;* if there are no definite localizing signs of the intracranial lesion, then the decompression should always be performed on the right side in right-handed patients in order to lessen thereby any possible operative damage to the adjacent motor speech area of the left cerebral cortex. In these cases, it is not so important to remove the hemorrhage as it is to offset its pressure effects. In cases of depressed fractures of the vault showing definite signs

*American Journal of Medical Science, April, 1915, No. 4, Vol. CXLIX.

of a high intracranial pressure, it is better surgical judgment to precede the elevation or removal of the depressed area of bone by a subtemporal decompression so that when the depressed bone is removed, there will be little or no danger of the underlying cerebral cortex being damaged by its protrusion through the bony opening; as the subtemporal decompression exposes a comparatively silent area of the brain—a portion of the temporo-sphenoidal lobe—its protrusion and possible damage would not appear clinically, whereas a partial paralysis, impairment of sensation or of vision, might occur, and frequently does result from operations performed over the more highly developed areas of the cerebral cortex. Besides, the subtemporal route provides not only an excellent exposure of the middle meningeal artery and that portion of the brain so frequently involved in fractures of the skull, but it affords drainage to the middle fossa of the skull—the chief intracranial cistern—at its lowest point at the base of the skull; again, the thinness of the squamous portion of the temporal bone makes the operation a less difficult one technically. The vertical incision (and not the usual curved incision) should be used not only to render the operative hemostasis more effective in that the trunk of the temporal artery at its lowest point at the very beginning of the operation and therefore there is no bleeding from its branches, but this incision also permits the removal of the underlying squamous bone as far as is possible beneath the temporal muscle—and yet the attachment of the temporal muscle to the parietal crest is left intact so that a firm closure of its separated muscle fibers is assured; this is a most important point in cases of high intracranial pressure as in brain tumors where a cerebral hernia or fungus might result from an imperfect closure of the temporal muscle. The insertion of silver and celluloid plates and other foreign bodies beneath the scalp is to be most strongly condemned.

If the intracranial pressure is so high that the cerebral cortex tends to protrude through the bony opening, it is frequently wiser in selected cases to perform a similar operation upon the opposite side of the head immediately after the first operation. I have been obliged to do this in only five per cent. of the patients; they are the ones having a swollen oedematous brain—water-logged, as it were, where the drainage of blood and cerebrospinal fluid is slight and not sufficient to cause a marked decrease of the intracranial pressure; in some doubtful cases, it is better judgment to wait for one or two days and even longer, before the second operation is considered advisable. The rubber tissue drains are usually removed on the first or second day post-operative, and the hospital convalescence ordinarily requires at least two weeks. Naturally, these patients should not enter into their former active life for a period of three months or even longer; a too early return to the strain and stress of modern life predisposes them to many complaints—both subjective and objective; repeated examinations of the fundus of the eye and of the superficial and deep reflexes are here most important in estimating the physical normality of the patient.

The end results of patients having brain injuries with or without a fracture of the skull have been an interesting study. It has become quite a common belief that once a man has had a fracture of the skull and then recovers, he is never the same person again. In 1912, I examined the records of three of the large hospitals of New York City during the decade of 1900-1910; the mortality of fractures of the skull was 46—48 per cent., the mortality of the patients operated upon was 87 per cent.—this high percentage due undoubtedly to the operation being postponed until the extreme stages of medullary compression and oedema, and also to the fact that the operation performed was the "turning down" of a bone flap—a much more formidable procedure than a decompression—and then the bone replaced so that even the benefits of a decompression were prevented; besides, in many cases, the dura was not opened, and as the dura is inelastic in adults, no adequate relief of the pressure could possibly be obtained. Of the patients, however, who were finally discharged as "well" or "cured," I was able to trace only 34 per cent., but of these 34 per cent. of the total

patients found, 67 per cent. of them were still suffering from the effects of the injury—that is, two-thirds of them were not as well as before the injury; the chief complaints were persistent headache, a change of personality of the depressed or of the excitable type and thus emotionally unstable, early fatigue making any prolonged mental or physical effort impossible and thus the inability to work, lapses of memory, spells of dizziness and faintness, and even epileptiform seizures in a small percentage of them. In examining the hospital records of the patients having these post-traumatic conditions, it was most interesting to ascertain that these were the patients—and there were but few exceptions—who regained consciousness gradually after several days and remained in the hospital for a period of four weeks and longer, whose charts made frequent mention of the severe headache and a low pulse rate of 60 and in some cases below 60—that is, the usual clinical signs of an increased intracranial pressure, but in whom an ophthalmoscopic examination had rarely been made. Many of these patients still showed the results of the increased intracranial pressure in their fundi and at lumbar puncture, and these were the ones upon whom a cranial decompression even at this late date caused a marked improvement; the operative findings were always associated with a "wet" swollen oedematous brain. Many of the so-called post-traumatic neurosis are in my opinion frequently superimposed upon this definite organic basis as the result of the brain injury. The treatment, therefore, of brain injuries should not be limited merely to the recovery of the patient as far as life is concerned, but it should also be directed toward obtaining a normal individual—approximating as closely as possible the conditions of the patient before the injury.

Besides these neurological conditions frequently benefited by operative procedures, there are still other ones in this field that can be only mentioned in the present paper. The excellent results obtained in those cases of persistent trifacial neuralgia which, finally, after the failure of all medical efforts, have had the posterior root of the Gasserian Ganglion severed, are possibly the most dramatic; the surgery of the peripheral nerves has also made a marked advance within the past few years and especially is this true of the operative treatment of selected cases of facial paralysis. Of the other neurological conditions amenable to surgical treatment, this work is still in the experimental stage.

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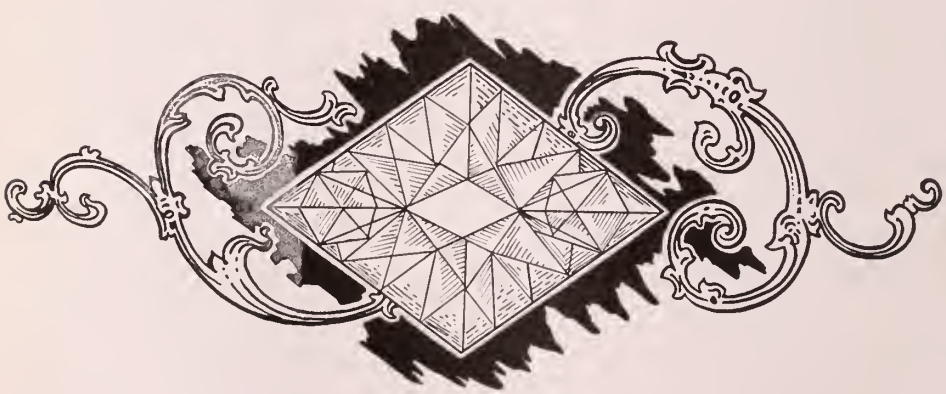

JUVENILE PARESIS—A BRIEF REVIEW WITH REPORT OF CASES.

By

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GENERAL paresis in the young, while not a rare occurrence, is so frequently met with, that it is worth while to report authenticated cases. Also the disease is often overlooked, or a wrong diagnosis is made, so that a short synopsis of the malady may not be inappropriate. An experienced neurologist recently told me that he had seen but one case in an experience of twenty years. Up to 1910, only about two hundred cases had been reported in the literature, and while this number has been somewhat augmented since that time, and a number of writers have called attention to the subject, it is a fact that juvenile paresis is not as well known as it should be by many of those who are apt to come into contact with it occasionally. It has fallen to my lot to see four cases with positive findings, and one suspicious case, within the last ten months. This led me to search the records of this institution for other cases, with the result that among more than twenty thousand admissions, covering a period of many years, but five cases of juvenile paresis were found. It must be stated, however, that only until approximately the last fifteen years have careful records been kept of cases, and within even a more recent period have routine laboratory tests been made, or even available. The examination of the spinal fluid in suspected organic cases has to a considerable extent made the diagnosis of paresis more exact, and less a matter of scientific guesswork. It is highly probable that before careful records were kept, many of these cases were not recognized, so that the five previous cases and my own four cases are but a part of the number really admitted. The cases in which the diagnosis was made were all admitted within the last ten years, and at least three of them were the object of careful study, and have been reported in the literature. In my own cases, I have not been able to study the parents or relatives of my patients, or to obtain exact histories of the patients themselves, as my records were taken from the patients themselves, and are therefore not reliable. I have been obliged to rely upon the clinical and neurological findings for my diagnosis.

It may be well to state, at this point, just what we mean by the term "juvenile" as applied to the paretic. As it is usually understood, it is applied to cases which are due to congenital luetic infection. It is not impossible, especially in the colored race, for a comparatively young person to acquire lues by sexual intercourse, or otherwise, and develop paresis before the age of twenty-five. My personal conception of the term "juvenile paresis" is "that occurring as the result of inherited syphilis, at any time during the first three decades of life." This because adult paresis usually occurs in the fifth or sixth decade, and as the result of post-natal luetic infection.

According to most text-books, the onset of juvenile paresis is most usual at or about the time of puberty Elsener, citing Straussler, says that hereditary syphilis may cause paresis after thirty years of age. I report below cases beginning at twenty-five, and another at thirty-five (although it is not at all certain that this is not an adult type, the result of an acquired syphilis). I also report a case beginning at the age of nine. Mott cites a similar case. In looking over the hospital records, I have been struck

by the large number of cases of paresis occurring between the ages of twenty-five and thirty-five. Many of these cases gave a history of definite post-natal or acquired infection, but in many of them there was no basis for believing that the individual had ever acquired lues. Unfortunately these records showed no data to determine whether the luetic infection was acquired or congenital. In view of Straussler's opinion, it strikes me as more than likely that some of these cases might be the result of inherited syphilis.

The usual statement regarding the interval between infection and the onset of paresis, is that it varies from twelve to twenty years. Recently there have been admitted to the hospital two or three cases in which paresis occurred in from two to three years after a known luetic infection. Again we have cases of paresis occurring as late as the seventieth year. I believe that the period after luetic infection during which paresis may develop is more variable than has hitherto been supposed, and that it may be considerably longer or shorter.

Individuals vary considerably in the amount of resistance to disease toxins and the proportion of stress to which they are able to react. In the congenital syphilitic, the nervous system is apt to be a *locus minorae resistentiae*, but the amount of lessening of resistance, the amount of stress he can comfortably withstand, and the proportionate predisposition to disease, vary considerably, and the breaking down of this resistance may come at a late or an early date, depending upon the factors in the individual case.

Etiologically the disease is a syphilitic disease, but whether it can be rightly called parasyphilitic, or whether, as some say, it should be considered a part of the protean, unnumbered manifestations of syphilis itself, I am unable to say. The latter theory seems to be strenghthened by the fact that we are able to find the spirochaete in the brain substance of paretics.

According to the latest dicta, inherited syphilis is always transmitted through the placenta, from the mother, who always shows a positive Wassermann, even though presenting no other symptoms of lues. She can not be infected by the child, nor in any other way (Colle-Baume law). The child, however, can infect its nurse through the nipple.

The offspring of syphilitic parents show a frightful mortality rate, more especially during the first seven years of life. This accounts for the comparatively small number of juvenile paretics—the children die before they reach the age at which the disease develops. I have intimated that the parents of juvenile paretics, especially the mothers, practically always give evidence of lues. In many cases one of the parents is a paretic. This may tend to uphold the theory that paresis follows infections with a special form of spirochaete. Many of the children who develop paresis give evidence of congenital lues, such as the Hutchinson's triad, Fournier's infantilism, osteochondritis syphilitica, rhacitis (to which the congenital syphilitic is especially liable), etc.

The primary manifestations of the disease, like those in the adult type, are apt to take the form of changes in the personality, morals and character of the individual. Upon these changes is engrafted a gradual progressive dementia. About one-half of these children are backward or actually feeble-minded, and as the first symptoms may be convulsive seizures, these patients are not infrequently admitted to epileptic colonies or other institutions with the diagnosis of epileptic imbecility. The other half are normally bright, and show normal development, though many of them begin to show some intellectual deterioration at about five years of age. Often they do well in school, and show normal adjustments in every way. At or before puberty, they begin to show signs of deterioration. In those cases in which the onset occurs after puberty, we note that there are few manifestations of the development of sexuality. Female children fail to menstruate in many cases. Masturbation is rather common among these individuals. Infantilism is by no means uncommon. One of my own cases is a striking example of infantilism.

A previously good-natured child becomes surly, morose, indifferent, careless,

wanders away from home, is forgetful, and gives up its occupation. Strange and unusual behavior may first attract the attention of the parents. Gradually other signs of mental deterioration present themselves. Apathy, indifference, marked hebetude—or perhaps extreme silliness of demeanor—become features of the case. Asocial acts are uncommon, in contrast to the adult type. Delusions and hallucinations are also uncommon, and parents often see no change until the child becomes untidy in its habits. Delusions of wealth, grandeur, and the like, occur only in adolescents, because ambition and the sexual passions do not dominate the will until puberty. Convulsions are frequent and often severe, and bear no relation to the prognosis, as the child may live for years after the beginning of convulsions. Paresis is, of course, a common symptom. They do not differ from those of the adult type.

The usual course of the disease is that of gradual deterioration, which becomes extreme, as these cases live for many years. One writer states that cases of this disease may live as long as fifteen years. However, five years is about the average duration of the malady.

Diagnosis of this disease is based upon a gradual mental deterioration, in a child previously intelligent, or a deepening of dementia in a feeble-minded child; with this we have neurological findings, quite like the adult type, though not so constant; added to these, laboratory tests give results differing in no wise from those of the adult type. It is said that a sluggish pupillary reaction is more common than the Argyle-Robertson pupil in juvenile paresis. The absence of hallucinations and delusions, the infrequency of asocial acts, help to differentiate it from dementia precox. From hysteria, disseminated sclerosis, imbecility with epilepsy, etc., we depend for differentiation upon the laboratory and neurological examinations. However, we must remember that the congenital syphilitic is subject to other diseases, and the presence of a positive Wassermann in the blood must not lead one to make a diagnosis of paresis or cerebral syphilis or tabes until we have searched for other proofs. As a reminder to those who may have forgotten the laboratory findings in paresis, I will enumerate them. 1. A positive Wassermann in the blood in practically 100 per cent. of cases. 2. A positive Wassermann in the spinal fluid in about 99 per cent. of cases. 3. Increase of protein content (especially globulin) and of the number of cells. 4. A typical curve in the Lange colloidal gold test, of which the following is a typical example, 5, 5, 5, 4, 4, 3, 2, 1, 0. The physical and neurological findings may not be present during the onset of the disease, but the laboratory examination will give typical results very early in its course.

The course of the disease is more protracted than in the adult type, and we find extreme grades of dementia, paresis, and bodily wasting. Difficulty in swallowing, large bed sores, and marked contractures of the limbs are seen in the later stages. Death is usually due to asthenia, septicemia, broncho-pneumonia, tuberculosis, or other intercurrent disease.

Treatment is the same as in the adult. Children are said to withstand mercurial injections better than adults. It is possible that the course of the disease may be delayed, and perhaps some of the disagreeable features mitigated to some extent by intensive treatment. Like the adult type, these cases can best be cared for in institutions, unless the relatives are able to afford trained nurses and constant care. We should not neglect to use specific treatment in these cases because of the poor prognosis. It is possible that we may be mistaken in our diagnoses, and if the case happens to be cerebrospinal syphilis, or some other luetic trouble than paresis, we would be liable to charges of negligence if we did not use every available means of treatment. I have seen a case of cerebrospinal syphilis in an adult, which gave every indication of being paresis, but intensive specific treatment was followed by recovery, and the diagnosis was changed by a different clinical and neurological picture.

The real treatment of this condition, however, is prophylactic. When a parent is known to be syphilitic, or a child gives evidence of congenital syphilis, we have a

right to demand examination of the blood and spinal fluid of the child, because they are potent paretics and tabetics (we have an infantile tabes, as well as an infantile paresis). If the tests show that the child is syphilitic, it, of course, follows that intensive anti-luetic treatment be followed out, with repetition of the laboratory examinations from time to time. The length of treatment is not to be guided by laboratory results alone, and one negative Wassermann does not justify cessation of treatment. There should be at least three successive negative results, and the examination should be repeated in a year or so after these negatives are obtained.

The cases to be reported below are taken from the records of this hospital. The first three are now on my wards, the fourth died there recently, and the rest are cases dead or discharged from the institution. Two of them have been reported in greater detail, but I believe they are worthy of repetition, especially as they were so carefully worked out.

CASE 1.—A colored boy, aged twelve years on admission, in July, 1915. Unfortunately we have never been able to secure a history of the case, and his mental condition has been such that he could tell nothing about himself. On admission, it was noted that he showed a tendency to mischievousness and vulgarity, and once attempted a sexual assault on an adult patient. He showed a tendency to sexual perversion. At that time, he was able to count to twenty, but could not comprehend what was wanted of him in other tests. A Binet-Simon test gave him a basic age of three, and a psychological age of four years.

Physical examination showed marked infantilism, head micro-cephalic, and a slight bulging at the lower intercostal ribs. Marked *genu valgus* and *pes planus* were present, interfering with walking to a considerable extent. Congenital dislocation of the femora was suspected, but this the X-rays failed to confirm. Neurologically, the mouth deviated to the left, there was tremor of the extended fingers, station was unsteady, knee jerks were spastic, and ankle clonus and Babinski were present on both sides. Pupillary reactions were not noted at this time. Laboratory tests were taken at a later date.

For the first year of his residence, he was restless and mischievous. He has had frequent convulsive seizures, resembling closely grand mal attacks. He is usually stuporous the day after an attack. His vocabulary is very limited, and he usually addresses everyone as "Buddy." In February, 1916, it was noted that the pupils were markedly dilated, and reacted to accommodation, but not to light. The tremor of the protruded tongue was marked, as was the exaggeration of the knee-jerks.

The Wassermann reaction of the blood serum was double positive in March, 1916. The cerebrospinal fluid showed the Wassermann reaction to be double positive in all dilutions. Other tests not made on account of free blood. In May, 1916, the cerebrospinal fluid gave double-positive Wassermann in the first two dilutions, plus-minus in the third dilutions, protein content was increased, and cells per cubic millimeter were 79.5. Langes colloidal gold test could not be performed on account of a slight amount of free blood.

He received active anti-luetic treatment for several months, but there was no noticeable improvement, except in conduct, and this was probably due to the fact that he was at first under the influence of another boy patient, who was later removed to another ward. He has shown gradual deterioration, and at the present time is in an extremely demented state. He sits all day long on one settee, doing nothing, taking no interest in his surroundings, and is unable to distinguish a piece of paper from a piece of bread, and will eat either if permitted. Convulsions are very frequent, almost daily. Pupils are dilated and fixed, and the lower limbs show paresis, so that he is practically unable to walk. He leads a purely vegetative existence.

CASE 2.—A colored boy of twenty-one years, admitted in January, 1917. He is a hostler by occupation. As in the first case, we have never seen his relatives. He was able to tell us that his father was alcoholic, and that his mother died in 1910, after a long illness, of which he does not know the nature. He has a brother who is in a children's home.

He claims to have obtained an eighth grade education, and to have had no difficulty in learning. He has worked at dish-washing, and other menial occupations in hotels. He was not able to give a good account of how he got along in life before being sent here.

He was put under observation for a dementia-precox-like psychosis, with auditory hallucinations, and a shut-in attitude, with slight mental deterioration. He was quiet and orderly on admission, assisted with light ward work, but in an inefficient manner. During the examination, he sat in a constrained attitude, hat in hand, and tried to co-operate in the examination.

The stream of talk was revelant but brief, and there was practically no spontaneous productivity. Speech was hesitating, slurring, and indistinct, and at once attracted my attention. Perception was slow, and the patient was emotionally indifferent and shut-in. Hallucinations and delusions were absent, insight was lacking, and memory for both recent and remote events was markedly impaired.

He was disoriented for time and place, and only approximately oriented for person. He was contented with his environment, and perfectly willing to remain in the hospital. Intelligence tests showed that he was considerably deteriorated.

Physical examination showed a slender, feminine, frame. Patient is left-handed. Facies was decidedly juvenile for his age; ears had adherent lobules; beard very scant; axillary hair is a fine, downy growth; genitalia small, especially the testes, which were infantile; pubic hair masculine in type. Neurological examination showed that the pupils did not react to light, but reacted slightly to accommodation. The tongue deviates slightly to the right. There was marked tremor of head, fingers, and speech. Muscular system poorly developed; movements slow; co-ordination fair; slight swaying in Romberg's test. Knee-jerks markedly exaggerated; slight Babinski on both sides.

Wassermann reaction with the blood serum ++; cerebrospinal fluid Wassermann ++ in all dilutions; protein content increased; cells per cubic millimeter, 9. The Lange colloidal gold test was not performed. The cell content was not typical, but it is possible that some of the cells were precipitated by standing longer than is usual before examination. But it is not rare to see a low cell count in a spinal fluid which is otherwise typical of paresis.

During his residence here, the boy has shown a rapid reduction of intelligence, until he is now confined to bed because of total inability to care for himself in any way. He is somewhat weak, but there is no true paresis. He has become rather obese and presents the typical picture of the advanced paretic, smiling fatuously in response to questions. He is able to tell his own name, and says he feels "fine." Otherwise no intelligent or relevant reply can be obtained. He frequently takes off his night-dress, and it is difficult to keep him properly clothed.

He has had no convulsions, and has never given any trouble, aside from his untidiness, and the difficulty in keeping him properly clothed. It may be remarked that while there were no hallucinations or delusions when the routine mental examination was made at the time of admission, a few ill-defined auditory hallucinations were present. At the present time, he simply shows the picture of extreme dementia, with well defined neurological picture, and a slightly atypical laboratory picture.

CASE 3.—There is some doubt as to whether this case may be classified as juvenile or not, though it has been diagnosed as such by the hospital staff. The patient is a colored man of thirty-five years. No history has ever been obtained from relatives, and the man's mental condition does not permit him to give us any information whatsoever.

Physically he presents the facies and appearance of a twenty-year-old boy, and would be taken for a typical imbecile by anyone who did not know his case. The pubic hair is feminine in type, and the genitalia show evidence of continuous onanism.

Neurological examination shows slurring speech, with stuttering and tremulousness also. The pupils are fixed, there is tremor of tongue and fingers, positive Romberg, exaggeration of the deep reflexes, and co-operation is poor. Writing shows marked tremor.

Wassermann of both blood and spinal fluid, ++. Unfortunately the other examinations of the spinal fluid have not been made.

Mental examination shows the picture of a low-grade idiocy, plus some confusion, and ill-defined visual hallucinations. He was noisy and disturbed on the first day of his stay, but quiet after becoming accustomed to his new environment. He is very untidy, merely grunts in reply to questions, is able to tell his name and age, and little else, sits in one place all day, staring vacantly into space. He is, of course, totally disoriented in all spheres. He gives no trouble, but when, at the insistent demand of his relatives, they were permitted to take him on a visit, he became so disturbed that they had to return him the next day.

The reader may not be ready to agree with me that this is a case of congenital paresis, especially as we have no history of the patient. The retardation of physical development, and the extremely low intelligence in a patient in whom the evidences of paresis were only recently evident, show that he is a defective, if not a congenital syphilitic, and we can only hazard a guess as to whether the lues was inherited or acquired. However, the picture as a whole inclines me to the belief that it is a true juvenile paresis of the late type, as described by certain authors.

CASE 4.—A colored boy of seventeen was admitted in March, 1915. Nothing is known as to his family, and very little about his past life. It is known that as a child he was seclusive, and did not play with the other children. He had practically no school life. He worked on a delivery wagon for a time, and one day was sent to the bank to make a deposit for his employer. A colored woman met him, took the money, marked the amount in the bank-book, and he went back and told his employer what had occurred. He was arrested, and it was discovered that he was a mental defective, and he came to us through the usual channels.

On admission, he was quiet and inoffensive, but passed through a brief period of excitement, stubbornness and combativeness. Speech was slow, stream of thought retarded, and he showed an infantile makeup which corresponded with the results of the Binet-Simon test. This gave him a basic age of five years, and a psychological age of six and three-fourths years.

Physical examination showed infantilism, otherwise both physical and neurological examinations were negative. The Wassermann of the blood was complete +. Unfortunately, the cerebrospinal fluid was never tested.

During the first months of his stay, he worked inefficiently braiding rugs, and was later given a parole of the grounds. He was placed under anti-luetic treatment. In the latter part of 1916,

he became very untidy, weak, and showed marked tremor of the lips and speech. The pupils were fixed. During the last six months of his life, he led a practically vegetative existence. Convulsions began one week before death, and were practically without cessation until death occurred. There had been none previously. Death was ascribed to asthenia.

In this case, as well as the preceding, the reader may doubt the diagnosis, in the light of the regrettable absence of laboratory findings. However, the picture of a progressive dementia, infantilism, the neurological symptoms appearing about a year before death, and the completely positive Wassermann, together with the convulsions ending in death, points strongly to the diagnosis of juvenile paresis. Autopsy was not permitted.

CASE 5.—A white youth, aged twenty years, was admitted in 1914. Family history was negative, excepting that the father died of gastric carcinoma. Mother is alive and healthy as far as known.

Patient was not strong as a child, and did not enter school until twelve. He made normal progress during his five years of school life. He sold papers and gum, and vended odd articles in a cheap theatre. He had typhoid fever at seventeen, and was said to have had a spinal injury at eighteen, necessitating the use of a cast for eight months. He had a fight with an older brother, injuring the latter, and was taken to Juvenile Court, where his mental condition was observed, and he was sent here.

On admission, he was oriented in all spheres, happy, but lacked insight. He said that he had peculiar bodily sensations, which he thought were caused by insects in his bed. There was a slight mental deterioration, and he showed an infantile reaction to his surroundings, crying for a few hours after admission. He was irritable, emotionally unstable, and frequently asked to be allowed to go home.

Physical examination showed that the face was asymmetrical; there was a deviation of the septum; a high palatal arch, and marked tremor of fingers and tongue. Wassermann reaction of blood serum, complete positive, also in spinal fluid. Protein content increased, cells per cubic millimeter, 47.

During his stay here it was noted that he imagined himself persecuted by attendants and patients in small matters; was emotionally unstable; irritable at times; occasionally resistive, and quite restless. Swift-Ellis treatments were given, but the only observable effect was to lower the cell count of the spinal fluid, to five or eight per cubic millimeter, and to slightly decrease the protein content.

There was little change in his condition while under observation, and he was removed from the institution by relatives, six months after admission, and nothing has ever been heard concerning him.

CASE 6.—This case has been reported in the literature, but is worthy of repetition here. It is that of a colored girl of seventeen years. The father is of a low order of intelligence, the mother a drunkard and prostitute, who gives evidences of syphilis; has had several miscarriages, and the patient's two brothers also give evidence of congenital syphilis.

The patient was the second child of the family. She had scarlet fever at one month, and was a sickly child for the first one and one-half years of life. She was always considered by the family to be "simple-minded." She went to school from ten to fourteen, but never got out of the fourth grade. She frequently ran away from school, and was called by her schoolmates "Crazy Ruth." About two years before admission, she was examined by a physician for evidences of rape, which were not found. She said at this time that she had had sexual intercourse before. She never menstruated.

A year before admission, she began to have trouble in walking—"bent forward at the waist," as her parents expressed it. She became irritable, seldom talked, and for the past seven months had not talked at all. She was extremely childish, untidy, threw her food on the floor, and sat in one rocking-chair all day. Finally she began to refuse food altogether, and walked with a bending at the knees.

On admission to this institution, she cried tremulously when approached, was unable to talk, lay in bed with thighs and knees flexed, and gritted her teeth continually. The facial expression was that of an idiot. She remained in bed during her entire stay. When fed, she sucked her food from the spoon in an infantile manner. She was unable to discriminate between food and other objects. She was of fretful disposition, had practically no mentality, and led a mere vegetative existence.

Physically, she had the appearance of a child of ten; the head was hydrocephalic in type; ears asymmetrical; teeth Hutchinsonian, palate highly arched. She was very emaciated. The breasts were normally developed, but the genitalia were small, and the pubic and axillary hair scant. There were beginning contractures of the knees. Neurologically, the pupils reacted very sluggishly to light, normally to accommodation. The deep reflexes were markedly exaggerated.

The spinal fluid showed lymphocytosis, cells per cubic millimeter fifty-four, protein content increases. Wassermann not made, as the case was admitted at a time when these tests were not available.

Soon after admission the patient developed a marked external strabismus of the left eye, also difficulty in swallowing. Later strabismus occurred in the right eye. Marked contracture of the

lower extremities developed at this time. Patient was noted as being very sleepy during the day. She had convulsive attacks during which the left side of the face was drawn, and she was stuporous for a time. The strabismus disappeared, and she then developed fibrillary twitchings of the lips and a fine tremor of the fingers, with marked incoordination of the muscular movements. Sensation was impaired, there was hypoalgesia, loss of control of the sphincters, and the sense of smell was impaired. Sensibility to touch was increased. She was given potassium iodide and mercury bichloride in therapeutic doses. She developed large bed sores over the trochanters, and died three months after admission. Autopsy showed extreme atrophy of the brain, induration of the brain substance and optic nerves, and meningo-encephalitis. The heart was abnormally small.

CASE 7.—The father of this patient died in this institution of general paresis. The mother, from whom the history was obtained, would give no other information about the family, and was evasive when questioned.

The patient was a white man of twenty-seven, whose birth and early development were said to be normal. He made normal progress in school, and worked as laborer carpenter and bill collector. He was said to have had no illness previously, and his habits were exemplary. He was always "nervous and high-tempered." For the past two years his relatives had considered him "peculiar," but they could not specify in what way.

Six months before admission he became irritable, destructive to clothing, cursed, talked constantly, and showed marked memory defects. The admission papers stated that he had slurring speech, cried a great deal, had paranoid ideas (said people took his money, clothing, etc.,) suffered from insomnia, and had shown a threatening attitude toward his mother.

On admission he was noisy, resistive, disturbed day and night, negativistic in attitude. No routine mental examination could be performed. Speech was slurring, he gritted his teeth constantly, was untidy, had to be tube-fed for a time. He believed his food was poisoned. He continually muttered to himself in an unintelligible tone.

Physical examination showed the breath sounds to be roughened throughout. There was roughening of the mitral and aortic sounds. Neurologically, there was exaggeration of the deep reflexes, Argyle-Robertson pupil, coarse tremor of muscles, lips and facial muscles. Gait was weak and unsteady.

Wassermann of blood serum plus-minus. Cerebrospinal fluid Wassermann double positive in all dilutions; protein content increased; cells per cubic millimeter 7.5; Lange's colloidal gold test gave 3-1-2-2-0-0-0-0-0-0. Urine gave evidences of nephritis.

During most of his stay here he was confined to bed. Most of the time he was excited, disturbed and destructive; would not keep on his clothing; was resistive and refused to be shaved. He continued to grit his teeth and mumble to himself. He showed very rapid mental and physical deterioration and died in a stuporous condition, one year after admission. Autopsy was not permitted.

There may be some who will not be willing to agree that this is a case of paresis due to inherited syphilis, because the fact that the father was a paretic does not exclude the possibility that the patient may have acquired lues. His sexual history was not obtainable, but from what we know about the case, he never gave any evidences of having acquired lues. He was said to be disinclined to leave home except for work, and there is a possibility that he never had sexual intercourse. While our information about the case is meagre, I believe that it is a true case of juvenile paresis.

CASE 8.—White male, aged nineteen years on admission. He had an illegitimate sister who has symptoms suggestive of congenital syphilis, and the mother had a miscarriage four months after the birth of the patient.

The patient's infancy and childhood were normal. He attended school from six to sixteen, reaching the sixth grade. He was obliged to quit school at sixteen because of weakness of the lower limbs, vertigo, nervousness and a tendency to fall frequently when on the street. A year before admission, he was treated in a hospital for "spinal trouble." Of late he had been very irritable, stupid, laughed in a silly manner, and became very seclusive. He counted his fingers all day, and made mistakes in so doing.

Physical examination on admission showed enlargement of all of the glands, a slight systolic mitral murmur, transmitted to the axilla. There was a slight atrophy of the entire left side of the body. At rest, there were choreiform movements of the extremities and gross tremors of the face and fingers. Coordination was poor; there was marked intention tremor; speech was ataxic. Romberg test was positive; gait ataxic. The senses of pain and smell were diminished. The right optic disc was irregular, the vessels were small, and there was beginning sclerosis of the arteries. The findings in the left side were similar, except that the disc was regular in outline. Argyle-Robertson pupils were present. The left side of the face was smooth, he was unable to whistle, the tongue was of the trombone type, and showed a tremor. There were fibrillary twitchings of the lips and lids. He was wholly unable to pronounce the test words. There was a slight amount of vertigo present.

Mentally he was oriented in all spheres, happy, lacked insight, was emotionally indifferent, memory markedly defective, and there was marked deterioration of intelligence.

The Wassermann test of the blood and spinal fluid was completely positive. The protein content of the spinal fluid was markedly increased, and cells per cubic millimeter were 260—an unusually high count for paresis.

He was given into the care of his relatives by the court, one month after admission, and nothing is known of his subsequent history.

CASE 9.—This case has been reported in full in the literature, being carefully studied by Dr. Miller, a former clinical director of this institution. I shall present it as briefly as possible on this account, but it is such a typical case and so well worked out that I cannot refrain from reporting it again.

The parents of the patient were not married. The father was a syphilitic, of dissipated habits, who infected the mother with syphilis a few months before the birth of the patient. She had two miscarriages before the patient's birth, and there were no other living children. Just before the patient was admitted here, the mother was admitted to an almshouse, suffering from general paresis, with typical neurological and clinical findings, and later died. The necropsy findings were also typical.

The patient's birth was normal. At three months he had a rash on his body which was pronounced syphilitic. He was treated for this for a short time. He was a bright, alert boy, of normal intelligence, a leader in the games of his playmates at the orphans' home of which he was an inmate. He reached the fifth grade in school. He was attentive, active, full of play, and in every way normal up to two years before admission. The first symptoms were scarcely noticeable to those in charge of him. He began to be absentminded, both in school and at play, movements became slow and hesitating, he showed difficulty in grasping questions, and his answers became increasingly incorrect. He kept apart from the other children, folded his arms, and walked back and forth in the yard, no longer interested in the games in which he was formerly a leader. He became depressed, and it was noticed that he made mistakes in repeating prayers which he had said daily for five years. Writing became slovenly, careless, almost unintelligible, and there was gradual mental deterioration with no other mental symptoms. His voice became high-pitched, he spoke slowly, and hesitated over words of two or more syllables. Then he began to lie and steal, though previously quite honest and of good ethics.

A month before admission he became untidy, his face was dull and expressionless, the facial muscles were tremulous, and there was cyanosis of hands and feet. He was found one night, wandering in a confused state, in the basement of the asylum.

On admission here he was rather frightened, quiet, timid, but the physician soon gained his confidence. He was much petted by older patients, but was emotionally indifferent and did not appreciate their attentions, and was oblivious to his surroundings. He answered simple questions about himself correctly, and recognized his speech difficulty. Memory for both recent and remote events was markedly impaired, and he repeated his prayers in a faulty manner. The tests of school knowledge were fairly well done. He seemed to think the physician was a priest.

Physical examination showed that the musculature was flabby, the naso-labial folds were obliterated, there were no lines of expression; slight kyphosis of the lumbar vertebrae; palpable cervical glands; breath foul. Neurologically he was very awkward in gait; the knee-jerks were exaggerated, especially the right; the Achilles were equally exaggerated; all superficial and deep reflexes were increased, and a bilateral Babinski was present. Pupils were irregular, react sluggishly to light, not at all to accommodation. Speech was of the stumbling, hesitating, eliding type known as "hot-potato" speech. Writing was irregular, the letters carelessly formed, elided, and run together. Sensation was normal.

The Wassermann in the blood and spinal fluid were completely positive, and the latter showed increase of protein content, and cells per cubic millimeter were 68.

During his residence of nine months in the hospital, all of the physical symptoms became marked; a hypoalgesia was present; the right pupil became immobile, and from the mental side there was deepening of dementia, memory became unreliable, and patient was quite contented with his environment. Three months after admission, he had three convulsions in one afternoon, right-sided, involving right eye-lid, hand and arm, and he was unconscious for a time. The convulsions were general at a later time, and he was in a stupor for two days. There was progressive weakening of the lower extremities, with loss of ability to walk; he became very untidy; lost weight rapidly; developed pressure sores; became markedly emaciated, and died of an intercurrent broncho-pneumonia, nine months after admission.

Necropsy showed extremely marked gross and histological changes of paresis. It is interesting to note that in both mother and son Ammon's Horn showed an intensive infiltration with plasma cells and leucocytes, and the bending portion, or *Umbiegungstelle*, of the curve showed no ganglion cells, also no pyramidal-cell layer was present at this portion. The spinal cord showed combined sclerosis of the posterior columns and pyramidal tracts, also some infiltration.

REFERENCES.

White and Jelliffe: Textbook of Diseases of the Nervous System.
Monographic Medicine, Vol. 6: Article by Henry L. Elsener.
Mott: System of Syphilis, Vol. 4, Article on Juvenile Paresis.
Miller, Henry W., and Nicholas Achucarro: Report of a Case of Juvenile Paresis.
Hough: A Case of Juvenile General Paralysis.

DELUSIONS DE LUXE.

By

J. HENRY DOWD, M. D., Buffalo, N. Y.

MAN'S ingenuity has brought forth automatic machinery almost human in action; there is only one piece of mechanism that surpasses some of these achievements—the brain of man. Anatomically speaking, the tissues comprising all brains is exactly alike, whether these belong to the most intelligent, or *vice versa*, and this applies with equal force back to the day of Adam.

But the action of the human brain cannot be compared to that of the man-made machine. Two machines, or a hundred, made to perform the same work will complete their work exactly alike, even to the ten-thousandth part of an inch. Not so with the brain, or popularly speaking, the mind of man. All brains may be exactly of the same texture, but as to their action, we find as many different personalities as we find differences in facial appearance, voice, and handwriting; no two alike.

With the creation of man, certain characteristics, *e. g.*, love, hatred, jealousy, dishonesty and lassitude, were created with him. To some extent these have been modified in many individuals; intensified in others, but nevertheless we find them all born in the off-spring of today.

Scarcely anyone will deny that things have changed since the days of Adam; each generation seems to be growing wiser, but, at the same time, weaker; not weakness of blood, bone or muscle, but weakness of the nervous system, the guiding spirit of every word, thought or action of the human being. The extent to which this weakness has developed and is transmitted, must be added to the personal characteristics, the result of which, at times, is a most complex condition with which to deal.

A great alienist has said, "We are all insane to a certain degree." Another confirms this by saying, "A person does not become insane, he has always been insane, and some particular factor makes it apparent." This might be considered to be "more truth than fiction," were there not such a wide gulf between what different people consider to be rational or irrational conditions.

Actions, thoughts, words and deeds, are only considered irrational in the eyes of the law when they overstep the bounds of reason. The rules of reason are laid down to us by individuals chosen to make our laws; these are supposed to be our guide in our associations with others. But we do not always follow these rules, and for a very good reason, viz., the balance-wheel of the directing mechanism gets out of adjustment. When that occurs, it is generally the physician who is called in as a judge of the condition, as well as a medical practitioner to readjust the individual, if possible; if not, then to attempt to place him where readjustment may take place.

The case is studied from three standpoints, viz., delusions, hallucinations and illusions, or, more simply designated, imagination and misinterpretation.

So much as a prelude to a report of a case due to the derangement of an organ, the normal action of which is as little known today as it was one hundred years ago.

In reporting the following case, which was seen in consultation in another state, only the important symptoms will be mentioned; could a history be given in detail since birth, it would fill a good-sized volume.

Florence G., aet. 23, had been a queer character almost from birth, a constant source of anxiety to her parents; she was what might be called a "perpetual clinic." Let me give a brief history as related to me by Dr. C., a careful observer, who had treated Florence since about her tenth year.

"As a child she had suffered from *pavor nocturnis* (night terrors) until she was seven or eight years of age. She would become terrified, jump out of bed, and, running to her mother, beg protection from a doctor who was going to cut her with a sharp knife or stab her with a needle. About twelve, she developed somnambulism and with it came delusions which later in life were quite amusing, except to her family and incidentally herself. Sleep walking (somnambulism is simply dreams carried into action) occurred about once in twelve days to three weeks. After these attacks Florence was usually found sitting on the sofa in the parlor with a pillow in an upright position by her side. During this time she talked almost constantly, to which, upon one occasion, I listened. It certainly was very amusing. She was evidently deep in love with a doctor, but always asked him to promise not to bring any sharp knives, needles or pins with him when he called; she said she was afraid he would stick them in the end of her nose. At other times, she would be found under a bright light writing—always to a doctor—along the same lines of intensified love and with the same admonitions. A careful examination of her blood revealed nothing abnormal except a slight anemia. The best of hygienic surroundings were established; diet was regulated and she was given tonic treatment as advised for this condition by Dana and others. Gradually sleep-walking disappeared between the ages of fourteen and fifteen, when she first menstruated, but with it came more troubles as the years rolled on. A doctor, whom she had not yet met, was violently in love with her, but before she married, she must have her ovaries removed lest she have a child which would fall on a sharp instrument that would penetrate its brain through its nose and cause death. At nineteen, she was sure she had met the doctor, a recent graduate who was introduced by a friend. He was of a good family with a bright outlook and things looked very favorable until, like lightning out of a clear sky, she almost went into collapse. Day after day she cried and at times would shake like a leaf in the wind. Suddenly there was a right hemiplegia with complete aphasia. As soon as she recovered from these symptoms, upon advice, she was taken to a sanitarium in the South (it was winter), where she remained three months, returning in a far better condition, but still with the delusion of a doctor's love and the great fear of sharp instruments.

"A young doctor, who was the cause, gave me all the information possible regarding the acute attack. They were practically engaged when she broached the subject of ovaryectomy for the prevention of child birth. He had laughed, which had caused her to become very excited. When he realized it was a reality with her and firmly told her he thought she was not in her right mind, in a rage, she left the room for her own apartments."

"By avoiding the presence of anyone who was using a needle or other sharp instrument, things went very smoothly for two years or more; and, except occasional reference to a doctor's love to some close girl friend, nothing happened. She was unusually well. About this time, she went to visit a girl friend at her country home. She had been there for four or five weeks when her mother was summoned to find her in a condition fully as bad as the previous one. It seems that a few days before, her friend had invited a couple of young doctors to spend the week-end. Although they only remained three days, they must have been days of bliss for Florence until she broached the subject of ovariectomy to one of them and received another rebuff. Though I did not see the doctor in question, and know only what her friend told me, I learned they spent all waking hours in each other's company. It seemed with Florence to be another case of 'eureka.' She was brought home, this time with a left facial paralysis, cried almost constantly and the least word of reference to pins, needles or knives, would throw her into a violent shaking of the whole body."

It was at this time that I was called, and a more heartrending condition I have rarely met. Miss G. was a beautiful girl, save for the Bell's palsy, exceptionally bright, and the most careful questioning failed to show her other than perfectly rational on every subject.

Careful examination showed no organic trouble; the clitoris showed no evidence of inflammation, adhesions or new growths, nor was there evidence of pin worms; nothing remained but to charge the nervous system as being the seat of trouble. The phosphatic index was 125 plus, or above normal; this showed great nerve-cell excitement; the feathery phosphatic crystals appeared normal in shape, but very small; they indicated but one condition—hysteria. It was quite evident that this young woman as a child had received some mental impression that she had nursed and brooded over for years until she could not shake it off, probably owing to the hysterical base upon which she stood. In her condition (it would be called shell shock were she a soldier in battle or about to go to the front), the first consideration was to relieve the nerve-cell irritability. This was easily and quickly accomplished by the use of valerian and the bromides, with complete rest and a nutritious but easily assimilated diet. As soon as the condition cleared, twitching ceased and sleep became normal, another "index" was to be taken and treatment followed according to its readings. If below normal, as is the rule in eighty per cent. or more of cases of acute nervousness, nerve-cell nutrition was advised (phosphorus, lecithin, etc.) in connection with valerian; this to be continued until the index registered normal.

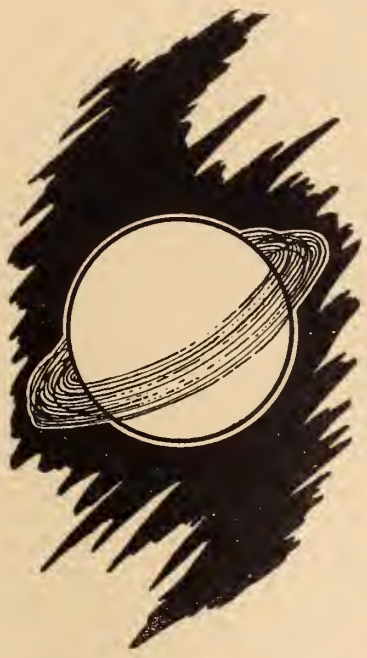
In a communication from Dr. C. a month or so later, he reported: "Florence is gaining steadily, in two weeks the Bell's palsy had passed away; she was practically herself in three weeks. At this time, the phosphatic index is 85 per cent. I have placed

her on a mixture of phosphorus, nux vomica and cannabis indica. She is improving rapidly; has never referred to love since your visit and, except for a shrug of the shoulder or the closing of her eyes when she sees needles or pins, she discloses no knowledge of the past."

Three years later I heard she was happily married, though not to a physician, and had a sweet young daughter.

Whether recovery in this case was due to upbuilding the impoverished nervous system and the sequential regulation of the mental balance-wheel, or to convincing the mind that the delusions were silly, I cannot say.

9 North Pearl Street.



EDITORIALS.

Conducted by

MARC RAY HUGHES, M. D., DAVID S. BOOTH, M. D.,
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"CAMPTOCORMIA."

Although this condition, otherwise known as Post-Traumatic Fixed Flexion, must have been observed many times previously, we learn from Practical Medical Series, 1916, Vol. X, that the first recorded cases were presented to the Paris Neurological Society in February, 1915, by A. Soques, and described as "Neuropathic pseudo-contracture." Subsequently Souques and Mme. Rosanoff-Saloff proposed the term camptocormia (Greek, Kampto, to bend, and Kormos, trunk of tree) for the condition. In July of the same year, Sicard described four types of this forward curvature as forms of "spondylitis," following shell shock, viz., "(1) spondylitis with kyphosis; (2) spondylitis with kyphoscoliosis; (3) spondylitis with lumbar rigidity; (4) spondylitis with total rigidity without curvature. The condition may be organic or hysteric, much more frequently the former, according to Sicard, who made the interesting observation that in fully three-fourths of the cases there is marked increase in albuminous substances in the spinal fluid without increase in cells. This albuminous increase is considered due to edema produced by vertebral compression sufficient to interfere with venous circulation.

"However, Mme. Rosanoff-Saloff, on the basis of sixteen cases, assures us that 'Camptocormia' is a functional condition and essentially similar to normal bending forward of the body except that the head is kept extended for the purpose of enlarging the field of vision. Permanent transverse grooves develop on the abdomen. Except in the early stage walking is little interfered with and the patients can readily pick up objects from the ground. But they cannot straighten themselves in the upright position and the attempt may cause prolonged tremor in the legs. On the other hand, when lying down most patients can readily straighten and even hyper-extend the back. There is no tenderness on pressure on the spinous processes, but the lumbar muscles are usually tender. Sensation, reflexes and X-ray appearances of the back are normal. Examination of the spinal fluid made from eight to ten months after the onset showed nothing abnormal.

"Nearly all of these patients were merely the victims of 'shell-shock' and not actually wounded though often they had been covered by earth or knocked over on the back, with more or less loss of consciousness. Severe pain in the lumbar regions is the earliest and most persistent symptom. The favorite position of the patient in the early stages is to sit 'with the head bent forward between the legs.' Any movement or change in position causes severe pain and after two or three weeks when the pain becomes less intense the patient tries to stand up straight and finds he cannot.

"As to pathogenesis, the author believes that during the first weeks of pain and immobilization the mind becomes fixed on the flexed attitude and as all of these persons are neuropaths—a very important etiologic point—the attitude becomes a fixed one.

"A successful method of treatment was hit on by Souques, who devised a form of corset which was applied with the patient lying down with the back straight. Those who could not straighten the back even when lying down were anesthetized. While wearing the corset the patients were subjected to strict discipline, forbidden to have visitors or receive letters, so as to reinforce their desire to get along without the corset."

In August, 1908, the writer had occasion to examine a case following an accident. The patient, Mrs. C. S., Hebrew, widow for 13 years; eyes and hair black, age 36, stated that she had worked "night and day" for past 14 years, losing but half-day during that time on account of illness. Works as saleswoman all day and at night oversees catering for weddings and parties, often up until after midnight and has been out until 3 or 4 o'clock a. m.

Stated that on the evening of June 7, 1908, was in derailed surface car wreck, all she recollects is that the lights went out and she fell; does not know how long she was in wreck, but remembers being taken out when she exclaimed, "Oh, my back!"

Has had several attacks of unconsciousness; last on July 4, 1908, has attacks of general tremor lasting as long as an hour, able to stand, but cannot walk without assistance; seems not to have control of legs, though walk has improved considerably past few days: edema of legs to knees since accident, but none at date of examination.

Tendor reflexes present and normal, save knee jerks slightly exaggerated; double spurious ankle clonus; scapular and plantar reflexes, absent; anesthesia to pain and touch entire body below neck, save hyperesthetic spots over seventh cervical and fourth dorsal, vertebrae; painful, pressure does not affect pulse or pupils, tenderness below left breast and in both groins.

Body bent forward which patient stated was not due to pain, and there was no rigidity of abdominal muscles.

In reply to question why she could not straighten up, replied she knew no other reason than "she just could not."

Body straightens normally when she lies on her back, on account of which all other examiners considered it a case of malingering, so that the author stood alone in his opinion that it was a case of hysteria.

The case went to trial, though the author was not called to testify but was subsequently informed the claimant was given a judgment for $5,000 which was settled. About a year thereafter claimant remained *in state quo*.—D. S. B.

JUVENILE FEMALE DELINQUENTS.

As E. S. Talbot* pointed out fourteen years ago, juvenile female delinquents are often degenerate in type. While, of course, as with all criminals, accidental criminals and law-made criminals were found among them, still the mass were egocentric instabilities of hereditary, congenital or period of stress origin. The sex appetite awakened early was rarely normal in methods of expression or object. Harlotry for very trivial gains was frequent. Prison explosive irritability was exceedingly frequent** especially when the institution (where Talbot studied his cases) was under Eddyite control. J. H. W. Rhein† recently studied 159 girls referred to him by the Philadelphia Girls' Aid Society. Forty gave satisfactory responses to the Binet-Simon tests. This is a decidedly high percentage when the enormous elements of error resultant from suggestion in this test are remembered. Two were only six years mentally; one seven; four eight; eleven nine; eight ten; two eleven; thirty twelve; two thirteen; nine fourteen, and seventeen fifteen. The greatest retardation was in a 26- and 27-year-old, and a 33-year-old woman, who had mental ages of 8.8 and 15 years, respectively, one 25-year-old of 9, and one 26-year-old of 12. Three were retarded twelve years; three, eleven years; five, ten years; eight, nine years; eleven, eight years; five, seven years; fourteen, six years; nine, five years; five, four years; ten, three years; nine, two years; and two, one year. Thirty-two others were subnormal or backward or

**Alienist and Neurologist*, 1903-5.
**Havelock Ellis, The Criminal.
†*N. Y. Med. Jour.*, October 20, 1917.

showed mental defects in various ways. One was an epileptic, nine were feeble-minded, two were hebephrenics, and four had well-marked major hysteria.

There is a mental or educational deficiency, which is the striking and usual characteristic of these girls. The poor response to educational tests in a large proportion of the cases is to be attributed to poor mental training rather than to congenital feeble-mindedness. There are many nondelinquents in the better classes who are just as much retarded mentally and who under the conditions obtaining with the delinquent girls would be delinquent themselves; but in the better classes there is the protection which they need, they are guarded from publicity, and thus the knowledge of their condition is confined to their immediate circle. These girls leave school early, have advanced poorly, are not students, are truants, are irregular at school and ultimately acquire very little education.

Of 137 cases two left school at ten years of age; four left school at eleven; seven, at twelve years; eighteen, at thirteen years; sixty, at fourteen years; fourteen, at fifteen years; fifteen, at sixteen years; and four, at seventeen years of age. One went to school until eighteen; two until nineteen; and one till twenty-two. Three had very little schooling and one no schooling at all. These were foreigners from Russian districts where there are no schools. The grades which the girls reached were studied in 115 cases. Many left school in the low grades, very few progressed to the eighth grade, and still fewer went as far as the first and second year in high school. Six never went beyond the second grade; eight reached the third grade; fifteen went to the fourth grade; twenty went no further than the fifth grade; sixteen went to the sixth grade; ten to the seventh grade; nineteen to the eighth grade; four went to the first year in high school, and five to the second year in high school. Of forty-seven girls who left school at fourteen years of age, four reached only the second grade; two, the third grade; seven, the fourth; ten, the fifth; six, the sixth; seven, the seventh; and eleven, the eighth. Twenty-eight were below the sixth grade. Education of these girls for various reasons is very elementary and their inability to pass good mental tests is not surprising, especially when we consider that their native mental capacity is poor. These girls rarely open a book after leaving school, do not read, do not care to read, and have little resources as to intellectual diversions.

The influence of character itself upon the causation of juvenile delinquents is great. The character of the delinquent when studied shows certain qualities which are more or less characteristic. According to Tonnini the juvenile delinquent is a social imbecile. The female juvenile delinquent has little or no imagination; she is restless, quick tempered, irritable, obstinate; she is wanting in the power of concentration, lacks interest in school, has poor judgment and power of discernment; her capacity for forming a moral concept is slight; she has little feeling and no sexual honor, and the lack of imagination prevents her picturing the future for which she has no concern. She is immature and ignorant. Her stoicism has been termed by Gervai "*Gefühlfremdheit.*" Character, according to Tanzi, may be looked upon as a function of the brain, and as he has pointed out there is no reason why it cannot be altered or its development perverted. These delinquent girls, as far as character alone is concerned, are unfit to enter into competition with others. They succumb in the struggles, fatigue and difficulties of modern civilization with its complex social relations. According to Gruhler, crime among children is related to character and disposition plus social environment, and in his studies a large proportion of the cases of delinquents were caused by environment and disposition.

One of the characteristics conspicuous by its absence in the delinquent girl is altruism. Their whole world centers around their own ego, like that of primitive man and all defectives instabilities and psychic morbidities. They rebel against discipline; they have no self-control; they cannot give and take and are uneducated in the art of social adjustment. They are weak morally and are readily led even by their own

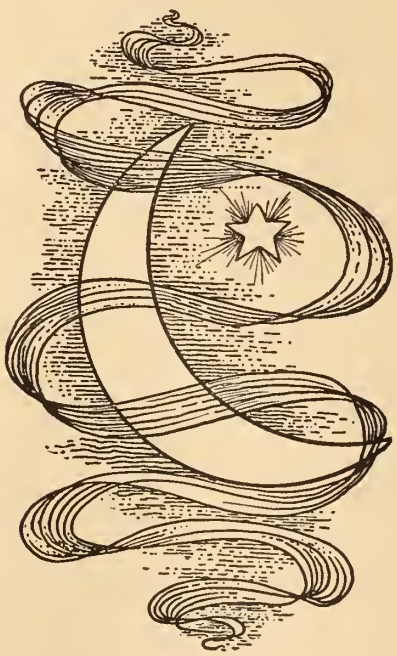
confession. They are uneducated, untruthful, and generally untrained in the science of living. One of the most potent elements in the development of delinquency is environment. Mőnkműller studied the home conditions of 623 juvenile delinquents and stated that it would have been surprising had the child led a moral life. Hanna Kent Schoff found the home conditions of 10,000 children who came to the juvenile court in a large proportion unfavorable to wholesome development. Morrison found that fifty-one per cent. of the inmates of industrial schools were illegitimate children or those who had lost one or both parents by death or desertion or who were the offspring of criminal parents. "Not more than fifteen per cent. of the juveniles committed to the reformatories and industrial schools come from homes in which they were fairly clothed, fairly fed, and fairly nourished." Gervai places much significance upon the fact that youthful prostitutes are totally ignorant of sexual honor, which is not surprising, as they are not infrequently the witness of the immorality of their parents. Birkigt called attention to the fact that in lower or poorer classes conditions were depraved, children neglected, training faulty, and associations evil. According to Spaulding there were 152 cases of positive criminality in the forbears of a thousand cases. Of 161 homes investigated by Rhein only eleven were fair to good. In fifty-eight of the homes, conditions were poor; not only evidence of poverty, but poor social conditions. Several members of the same family of mixed sexes slept in the same bed or room, stepfather with daughter, girl with stepbrother or uncle, offenses against chastity resulting.

Sexual immorality in the mothers and fathers was common. In twenty-nine families alcoholism was present in one or both parents. Divorce, remarriage, and separation of parents were present in ten families. In thirteen cases there was a stepfather or stepmother and often stepbrothers and stepsisters, against whom a rebellious attitude arose. There was a history of abuse at home in some instances.

What influence certain occupations have upon the causation of delinquency has been made the subject of investigations, especially by Mary Conyngton, who concluded from a study of the relation between occupation and criminality of women that the widening of the industrial sphere of woman is not accompanied by increase in criminality. Delinquents from the domestic class are those who especially offend against chastity, due to the fact that when too low to be employed elsewhere they can always get positions in that work. Occupational influences seem, however, to be on the whole nil. The causes were those operative before they entered the industrial world. The occupations of Rhein's cases were as follows: The majority worked in mills or factories. Then in order of frequency the occupations were housework, laundry work, waiting, workers in stores, telephone operators, child's nurses, seamstresses, bookkeepers, manicurists and dancers. Three had no work and no records in nine instances of work. The most dangerous occupation of girls in Rhein's opinion is laundry work, as far as contamination is concerned. There seems to be evidence that a low moral type are employed in public laundries. Otherwise there was no relation between delinquency and character of occupations.

Sutherland, in a study of crimes connected with feeble-mindedness, in 142 cases, found fifty-nine who were thieves or burglars; thirty were guilty of violence, murder and wounding; twenty who were guilty of sexual crime; eighteen of larceny, and fifteen who were forgers and who wrote threatening letters. The most frequent offense among delinquent girls studied by Rhein consisted of offenses against chastity. Of these there were ninety-two. Here, however, there is an enormous element of error since false accusations are often made to avoid payment of wages or to release "philanthropists" from an unprofitable contract or to satisfy the prurient prudery of some mistress or some repulsed married or unmarried roue. Unchastity *per se* is not an antisocial crime and hence its character should be carefully sifted. There were thirty harlots in Rhein's cases. Errabund tendencies of spasmodic type occurred in twenty cases, tramp tendencies in five. There were fourteen thieves. One hebephreniac was a

larcenist and one a tramp; one epileptic was suicidal and spasmodically errabund and another epileptic was spasmodically unchaste. There were two perverts. One hysteric was kleptolagniac; one was spasmodically errabund but sexually anesthetic. According to Rhein, the facts that stand out prominently are: 1, bad home conditions; 2, poor characters; 3, lack of education; 4, poor mental gifts; 5, actual feeble-mindedness and mental disease in a few cases. The weak character and poor educational gifts of these girls are responsible for the low resistance to temptation which is offered, temptations which by reason of their poor social surroundings are intensely operative in the developmental period of their lives when they are physiologically unstable. The root of the evil is to be found in vicious home influences, bad social education, and insufficient intellectual training. The cure must be sought in attacking the evils in the home—J. G. K.



SELECTIONS.

CLINICAL NEUROLOGY

THE PSYCHONEUROTIC TEMPERAMENT AND ITS REACTIONS TO MILITARY SERVICE.—E. Fryer Ballard, Capt., R. A. M. C. (T.), *Journal of Mental Science*, uses the term temperament in this paper to denote the sum total of inherent emotional potentialities and kinetic tendencies peculiar to the individual. A person's tendencies to action and reaction, his outlook upon life, and his liability to mental and nervous disorder, are in a large measure determined by the temperament with which he is born. Character, in the usual sense of the term, and personality, at any given time, are the resultant of temperament and environment in its widest sense, past and present, and previous reactions thereto, and are varying quantities. Temperament, although susceptible of modification by external influences, cannot be changed fundamentally in type.

Although specific abnormal temperaments are fairly clearly defined one from the other, there is no abrupt line of demarcation between the abnormal and the normal.

Certain clinical abnormalities of temperament indicate a liability on the part of their subjects in excess of that possessed by normal people, to attacks of certain special psychoses and psychoneuroses. It is well-nigh impossible to draw a line of demarcation between the temperament and an attenuated form of the psychosis and psychoneurosis to which the temperament is specially susceptible. As there are gradations between the normal and abnormal in temperament, so are these gradations between the abnormal temperament and the psychosis.

Apparently normal persons may under adverse conditions develop attacks of psychoses, etc., which implies that, temporarily at any rate, such persons have acquired the relatively greater liability to the psychosis which is involved in the abnormal temperament.

Combinations of temperaments are common, but for practical purposes it is desirable to recognize the following varieties: (1) hysterical; (2) psychasthenic; (3) epileptic; (4) paranoiacal; (5) manic-depressive, and (6) dementia precox type.

These six abnormal temperaments fall into two classes.

The first class, in which hyperesthesia and a tendency to excessive reaction to external stimuli are prominent features, includes the temperaments associated with the psychoneuroses, hysteria, psychasthenia and epilepsy.

The second class includes the temperaments associated with the psychoses, paranoia, manic-depressive insanity, and dementia precox—in which such hyperesthesia is absent. In this paper the author discusses only Class I.

The psychoneurotic diathesis is used to embrace the hysterical, psychasthenic and epileptic temperaments.

In cases of psychoneurosis it is no easy matter to determine exactly to which individual syndrome particular symptoms belong.

A special exacerbation of symptoms of fear type occurring in psychoneurotics has been elevated into a fourth syndrome under the name of the anxiety neurosis.

The writer classifies the symptoms of the psychoneuroses and the anxiety neurosis roughly on theoretical psychological grounds as follows:

(1) Symptoms which are disguised fulfillments of suppressed instinctive complexes, and are not accompanied by the affective tones of such complexes—are hysterical.

These includes anesthesias, paralyses, deafness, dumbness, amnesia, and some cases of stupor, automatism and incoordination in movement.

(2) Symptoms which are partially disguised expressions of such complexes, and are accompanied by unpleasant affective tones not amounting to emotions—are psychasthenic. These include coarse tremors, stammering, localized sweating, palpitation, irrepressible ideas, impulses and phobias, general nervousness and hyperesthesia to external and internal impressions (the latter being associated with visceral neuroses).

(3) Symptoms which are undisguised expressions of the instinctive state and are accompanied by an acute tone of fear (*i. e.*, those in which suppression has failed) come under the heading of the anxiety neurosis.

Such symptoms are fine tremors, generalized sweating, somatic apprehension, agitation, feelings of impending death, elevated upper eyelids, dilated pupils, palpitation; and all the manifestations of fear, ranging from acute anxiety to terror.

(4) Fits beginning in early life, accompanied by the specialized traits of the epileptic temperament, and associated with some degree of mental hebetude—constitute epilepsy. Fits that begin after childhood (apart from organic cerebral lesion), often called psychogenetic, and, therefore, not associated with the specialized epileptic temperament and weak-mindedness, are hysterical (*i. e.*, explosive results of over suppression), the only essential difference being one of the chronological incidence of the fits and the results of this. Equivalents of stupor, malaise with confusion, delirium and other dissociations of consciousness, are not peculiar to epilepsy, but occur in the other neuroses, and are frequently hysterical, the clinical differences again being due to the same factors as in the case of fits.

(5) Vertigo, headache, insomnia, vivid dreams, momentary confusion varying from transitory loss of attention to *petit mal*, are found frequently in all the psychoneuroses.

The author describes briefly the temperaments especially susceptible to the above symptoms.

The Hysterical Temperament.—The writer regards a hyperexcitability of the instincts as one of the main factors in the production of this temperament. Its subjects are emotional suggestible dreamers. They tend to react excessively to stimuli arising from within or without. Affective hyperesthesia is marked. They are easily moved to laughter, anger, or tears by trifling incidents, and their emotions are evanescent. Although self-centered and sensitive, their auto-criticism is poor, and their power of accurate introspection defective.

Their tendency to excessive reaction to stimuli (due to affective hyperesthesia) results in a habitual impulse to banish from their minds (*i. e.*, suppress into the subconscious) the results of stimuli productive of conflict between instinctive desire and environment, and hence unpleasant emotions. This process of suppression becomes a well-marked mental habit. They fail to face and grapple with incidents likely to result in such conflicts (*i. e.*, unpleasant incidents), but promptly suppress instead. Consequently they are occasionally capable in adverse circumstances of rising transitorily above their environment, and of acting with decision, promptness and even heroism, but in an impulsive, extreme, and ill-considered fashion. Whether they fail to suppress and therefore act in accordance with their over-excitable instincts, or suppress and act in opposition thereto, their conduct is always colored by this explosiveness. If they suppress their tendency to instinctive conduct often or long enough, they develop episodes.

Hysterics have a craving for sympathy. They like to think they are misunderstood, and to play the aggrieved martyr, if they do not receive the meed of mollycoddling they imagine they deserve. Opposition results in outbursts of emotion, or episodes of somatic types, or fits, dissociated consciousness, wandering, etc., just as

other forms of stress do in these cases. They are also more liable than normal persons to psychasthenia, anxiety neurosis, and other neurotic symptoms.

The Psychasthenic Temperament.—Under this heading are included the neurasthenic and the anxiety temperaments. Like hysterics, persons of psychasthenic temperament are hypersensitive and manifest well-marked affective hyperesthesia, but the results are different in the two cases. Although prone when taken off their guard to act instinctively and impulsively in response to stimuli, psychasthenics for the most part consider the stimuli, face their conflicts—often over-estimating their unpleasantness—but realizing that their tendencies to undue reaction must not be allowed play in order to dissipate the keen affective tones to which the stimuli have given rise, they suppress their tendency to instinctive reaction.

Whereas, the hysteric usually takes the line of least resistance in conduct, the psychasthenic acts according to his judgment, paying the penalty of instinctive suppression and voluntary conduct by getting disturbances of his coenesthesis—unpleasant visceral sensations and functional disorders irrepressible ideas, phobias, etc. The hysteric suppresses the total resultant of unpleasant stimuli and if circumstances permit, acts instinctively; the psychasthenic suppresses this very tendency to instinctive action.

If circumstances do not permit instinctive action, the individual develops some hysterical episode. If the psychasthenic, owing to the strength of the stimuli, cannot any longer bring himself to react according to his judgment, *e. g.*, when he can no longer bear the affective results of stimuli, and his own previous suppression of tendency to instinctive reaction, he breaks, and develops the anxiety neurosis.

Psychasthenics when well (*i. e.*, free from anxiety neurosis) are capable of rapid decision and excellent execution; are often intellectual, active, energetic and hard-working, and are apt to be of a serious vein, although frequently wearing a mask of light cynicism. Their judgment is remarkably accurate as regards others, and sound as regards themselves, once they have learnt themselves. They are born "worries," irritable, impatient and explosive, anticipating and exaggerating troubles, usually to surmount them satisfactorily when they come to pass; but when of mature years they become philosophers. Occasionally they are self-deprecatory until they learn life. Work is their forte, worry their undoing.

Once the anxiety neurosis becomes established, even after recovery, the individual is never capable of quite the same resistance to the jars and buffets of fate. He remains a good worker, but any slight stimulus associated with the exciting cause of the breakdown invariably tends to bring about a return of the anxiety neurosis. Thus a psychasthenic after such an attack is permanently broken so far as some special circumstances are concerned, but quite capable of grappling with dissimilar stimuli and environments.

The Epileptic Temperament.—The chief features of this temperament as seen in chronic epileptics, *i. e.*, persons who have suffered from fits, with or without remissions, from early life, are as follows:

Sensitiveness to external stimuli with a tendency to excessive reaction, irritability, explosiveness, a marked tendency to introspection combined with excellent auto-criticism; perseverance, energy and capacity for taking pains; modified and accompanied by slow mental action, clumsiness in thought and movement, and usually a somewhat limited vocabulary, *i. e.*, symptoms of slight feeble-mindedness. The episodes associated with this temperament are fits and "equivalents," both tending to be short, sudden, periodical, similar in those of the same type, and more or less guiltless of external cause.

These three temperaments have an underlying resemblance, probably due to a closely-allied if not common basis.

In all, the outstanding features are hyperesthesia, with an accompanying tendency to excessive reaction to stimuli; resulting clinically in affective sensitiveness, emotional instability, intolerance of unpleasant affective states, explosiveness of conduct, and lack

of adaptability to environment. In all, emotional stress results in abnormal but allied reactions—sometimes superficially diverse clinically, often clinically similar.

The anesthesias and paralyses of hysteria are represented in psychasthenia by parasthesias and coarse tremors, incoordination forming the link between paralysis and tremor.

The resemblances between the hysterical psychical episodes and those of epilepsy are equally clear. The early incidence of fits in chronic epileptics probably accounts for the weakmindedness which colors their temperament and episodes, periodicity resulting from cerebral habit.

An inherent nervous instability lies at the root of all three psychoneuroses; epilepsy representing the most severe form, hysteria the next, and psychasthenia the nearest approach to the normal. Probably environment in early life plays a part in determining which type shall develop from a common psychoneurotic diathesis. This conception brings these psychoneuroses into line with mania, melancholia, melancholic stupor, and mixed conditions, which are regarded as manifestations of an underlying manic-depressive diathesis.

Many considerations point to an inherent abnormality of the vasomotor system in the etiology of the psychoneurotic diathesis. Evidences of this, seen in all three psychoneuroses, are low blood pressure, sweats, vertigo, fits, flushings, palpitation, feelings of impending death or "all goneness," edema, blueness of extremities, etc.

The theory of a common basis for the psychoneuroses appears to be borne out by the study of the psychoneurotic symptoms of battle-origin. A large percentage of battle-syndromes manifest symptoms of hysteria, psychasthenia, epilepsy and indeterminate intermediate signs which might belong to any of the three. Almost all cases exhibit some degree of anxiety neurosis, and not a few "shell shocks" exhibit each psychoneurosis in the same order and succession as that suggested for the relative severity of the inherent temperaments, viz.:

(1) Loss, or hysterical dissociations of consciousness (N. B.—Chronic "fitting" epileptics seldom reach the firing line); (2) "hysterical" fits, paralyses, commonly dumbness; (3) anxiety neurosis; (4) psychasthenia; (5) recovery.

In unfavorable cases are found instead: (4) "hysteroepileptic" fits and equivalents; (5) "epileptic" fits.

Severe cases of war neurosis show mingled symptoms, and many, according to changes of environment, oscillate between all the syndromes. Nearly all cases manifest vertigo, headache, insomnia, terrifying dreams, and momentary loss of power of attention. Chronic "shell-shock" cases who do not have fits almost invariably suffer from "equivalents" practically indistinguishable except in intensity from those of chronic epileptics; these usually take the form of vertigo, malaise, headache, morose depression and wound-up temper.

The temperamental traits of soldiers suffering from battle-psychoneurosis, who had apparently been normal prior to the war, show a well-marked mingling of the three psychoneurotic temperaments.

The Hysterical Temperament.—(1) Pure hysterics who do not manifest somatic episodes, fits, or dissociations of consciousness in civil life, should be trained rapidly for the firing line. They sometimes do well for a time, and may distinguish themselves in fulfilling a previous heroic day-dream.

(2) When such cases develop an episode they should be cured at once near the firing line, by hypnosis or some modification thereof that provides an outlet for the suppressed fear instinct in dream form, and returned to the front line.

(3) A second similar breakdown should be followed by base hospital treatment. If successful, the man should be again sent up.

(4) The supervention of the anxiety neurosis renders it necessary to send the man home to hospital

(5) Those hysterics who suffer from occasional episodes while training at home should be marked *permanently* for non-fighting service.

(6) Men who are discovered to be markedly unstable emotionally, and who prior to foreign service, suffer from frequent episodes, should be invalided out.

(7) Any combination of anxiety neurosis with hysteria should indicate permanent home service.

(8) Hysteroepilepsy, according to its severity, should mark a man home service or permanently unfit.

The Psychasthenic Temperament.—(1) Mild psychasthenics, who have never had an anxiety neurosis, and who only manifest mild stigmata when run down, *e. g.*, stammer, occasional irrepressible ideas, and "worrying," are fit for the firing line. (2) Psychasthenics who have recovered from an anxiety neurosis *not* due to battle nor to family troubles, separation from sick or penurious relatives, (*i. e.*, "the home complex"), are fit for garrison duty abroad. (3) Those who have had a home complex anxiety neurosis within recent years are only fit for home service. (4) Psychasthenics who have frequently suffered with anxiety or exhaustion (true neurasthenic) symptoms in civil life, are useless for the army. (5) Soldiers returned from an Expeditionary Force, whether previously psychasthenic or not, who develop anxiety neurosis followed by psychasthenia, as the result of shell-shock, shell-fright, or battle strain, should be marked permanently for home service at hospital, and travelling medical boards should not be allowed to raise their category. Experience leads to two conclusions of this sort:

(i) That many "shell-shocked" soldiers are lost entirely to the army by travelling medical boards raising their categories, and thus causing relapses, rendering invaliding necessary in the case of men previously fit to serve at home.

(ii) That the fear or knowledge of such raising of categories prevents many "shell-shock" cases recovering in hospital sufficiently to serve at home or on garrison duty abroad; therefore, such men have to be invalided out.

The Epileptic Temperament.—(1) Long-standing epileptics who have only occasional fits, and no, or only mild, equivalents such as slight periodical moroseness, can be sent into the firing line. Apart from shell-shock such cases appear to be little the worse for useful fighting, probably owing to the all-round dulling due to the chronicity of their malady.

(2) Persons of epileptic temperament who have recovered from fits, *i. e.*, in whom there is little dulling of sensibility, are likely to develop severe equivalents and fits at the Front, and should be kept at home.

(3) It will be seen, therefore, that slight mental deterioration in cases of class (1) is no contra-indication for active service.

Epileptics of type (1) who have been "shell-shocked," although they usually recover rapidly from the hysterical part of their resultant hystero-epilepsy, should not be sent to the line again.

(5) Epileptics with severe equivalents, whether they have fits at the time or not, are totally unfit for the army.

(6) The same is true of persons of epileptic temperament, with or without fits, who show anxiety or psychasthenic symptoms.

(7) The practice, therefore, of discharging all epileptics who "fit" is probably a mistaken one. Many can do excellent work in quiet posts, *e. g.*, in offices, home hospitals, labor companies, at fatigues, or as servants in units.

Men who have always suffered from psychoneurotic diathesis should simply be given rest in hospital while their discharge from the service is being effected, combined with the assurance that the latter is being done. This is sufficient in the vast majority of cases to cure the exacerbation, and leave them none the worse for their military

experience. If at all disabled for civil life when discharged they should be given a gratuity, not a pension.

A few cases that break down under excessive stress of one sort or another while serving at home recover sufficiently in hospital in a short time merely as the result of the removal of that stress.

In the *psychoneuroses first appearing after battle* the author finds no clinical distinctions between cases supposed to be due to "commotion" and those supposed to be due to "emotion." It is waste of time to psychoanalyze in the Freudian sense these men. The complex, if any, suppressed is the fear complex, and to fish for other things merely does harm. Secondly, only certain types should be treated psychotherapeutically which does not include "therapeutic conversation." If the case is going to be discharged from the army, tell him so. Patients suffering from hysterical or psychasthenic episodes should be cured, if possible, by some method of suggestion or by psychoanalysis of buried battle memories only.

Anxiety types, very recent types (*i. e.*, convoy cases before they have rested and settled down), should have none of these forms of treatment, let alone electricity!

The importance of choosing the right time and type of case for psychical treatment cannot be over-estimated.

Psychoneuroses occurrng after battle in persons previously neurotic are often severe. The majority were formerly quite competent in civil life. One should endeavor to cure the suppressed fear-complex if there be any suppression; anxiety neurosis types should be rested, cheered, assured of their discharge, and they will get back, or very near to, their pre-war level.

One of the most common varieties of psychoneurotic type admitted to the hospital is the psychoneurotic diathesis, in which the patient, after a few weeks in the army, develops some serious mental disturbance. These boys are slightly feeble-minded, but their main disability lies in their inherent inability to cope practically with army life.

They have usually been shy, solitary boys, have never played games, never dissipated or indulged in pranks, but have all their lives been timid, seclusive, and introspective. In most cases they have never left home before. They may have had fits in childhood, or some other stigmata, or general ill-health, which prevented their regular attendance at school, or they may have been dunces there. They have in almost all cases been teased and bullied at school and in the army. Before their minds break down they may appear sullen through stupidity or nervous lack of concentration; they are sometimes regarded as malingerers by incompetent judges, or as cowards because they are nervously unstable.

When admitted to hospital the condition is usually one of severe depression, with or without anxiety and tremor, or, not infrequently, a state of confusion or hysterical dissociation of consciousness. A fair proportion terminate in dementia precox.

If a boy at school cannot play games and mix happily with his fellows, but is a shy game-shirker, a dull pupil in spite of perseverance, and a butt, he cannot be converted into a soldier at the age of 18 by our present methods.

The author offers the following suggestions:

(1) That the psychoneuroses, epilepsy, psychasthenia, and hysteria, have a common basis, which may be called the psychoneurotic temperament or diathesis, which, in turn, is dependent upon deviations in the degree of activity of natural psychological functions.

(2) That these disorders, whatever their physical basis may be, are for practical purposes mental disorders, and should be treated as such. We cannot yet make an unadaptable man adaptable by neurological methods.

(3) That neurologists and others who have had no civilian experience of psychological medicine or mental disorders, but have acquired some knowledge of psychotherapeutics, are not the best persons to treat psychoneuroses or other mental disorders,

nor to diagnose them, e. g., many so-called "shell-shocks" turn out to be "mental cases," even in the restricted sense of the latter term; not a few early dementia precox cases are labelled "neurasthenia" and quite a number of "mental (?)" types are discovered to be hysterics.

(4) That psychoanalysis, hypnotism, seclusion, and other forms of psychotherapeutics are dangerous weapons in the hands of such neurologists.

(5) That it is desirable that there should be established central special recruiting boards, to which all mentally doubtful examinees, and those complaining of psychoneurotic, etc., symptoms, should be referred by the ordinary recruiting boards before passing such cases into the army.

(6) That the powers of travelling medical boards should be curtailed over cases categorized by a special hospital on account of psychoneurotic affections. It is surely bad policy that the opinion of a T. M. B., founded upon a few moments' examination of a man it has never seen before, should over-ride the considered opinion of a specialist who has had the man under observation in all his moods for weeks.

(7) That T. M. B.s before re-categorizing recently joined soldiers complaining of psychoneurotic symptoms or manifesting such, should send them into a special hospital for report.

MUTISM, APHONIA AND DEAFNESS AMONG SOLDIERS, OF PSYCHICAL ORIGIN, FROM ORGANIC CAUSES.—*Malingering and Objective Differential Diagnoses* (*Mutisimo, Afonia, Sordita nei Militari, di Origine Psichica, da Cause Organiche: Simulizioni e Criteri Differenziali Obiettivi*). Prof. G. Gradenigo, (*Rivista di Patologia Nervosa e Mentale*, March, 1917) asserts that he is not concerned with the sensorial-idealistic side of the phenomenon of speech, but only with the motor side; he is concerned only with mutism or the complete failure of speech (motor aphasia), and with aphonia or the failure of the laryngeal sound with persistence of the whispering voice.

The organic causes of these conditions and of deafness may be divided into two categories: those due to various diseases, and those due to grave traumatisms of the head and neck. "These traumatisms in the present war are caused for the most part by terrible explosions, which produce lesions, sometimes very grave, of the ears, such as lacerations and destruction of the tympanum, neurolabyrinthic disturbances and hemorrhages, fractures of the temporal bones, etc., also cerebral disturbances, fractures of the skull, etc. Sometimes the patient has been thrown to a distance with great force, either striking his head against a rock, or being buried under a heap of stones of earth." The same explosions may provoke also morbid psychical manifestations.

In the majority of the psychical forms of these cases there undoubtedly exists a predisposition to disease of the nervous system, a feebler power of resistance to morbid factors. The principal predisposing elements are endogenous intoxications and states of exhaustion of the nervous system (fatigue, insomnia, indigestion, and disease, particularly typhoid), and exogenous intoxications (alcohol and tobacco). Further, the emotions, pre-occupations, and the ever-present thoughts of dangers, which have been overcome, or are about to be overcome, act injuriously on the nervous system. Among other determinative causes of the psychical forms are mechanical and acoustic injuries from the explosions of shells and hand grenades in the vicinity, exposure to prolonged and intense bombardments, and especially strong psychical impressions, as fear, etc. The simultaneous action of these various and energetic causes produce in the patient—especially if his nervous system has little resistance—stupor, a thundering noise in the ears, sometimes true psychoses, in which, by the side of the most different forms of psychical and sensorial disturbances, one finds frequently deafness, mutism and aphonia due to the exaggerated stimulation of the acoustic centers and neighboring cortical centers of speech. One easily understands this when one thinks of the intimate connection between the voice and all the manifestations of affective life.

Passing on to a closer study of the psychical forms, the writer points out that such patients often behave very much like common malingerers, because in each category one is concerned with phenomena of the will. In the case of the really diseased person there is a perversion and an impotence of the will due to auto-suggestion which is often very difficult to overcome; in the malingerer there is the will to deceive.

Complete mutism is rare in the organic forms, while in the psychical forms it is generally the rule. Psychical mutism is not accompanied by verbal deafness, agraphia, or optic aphasia. In a psychical form allied to mutism one observes a scanning, dragging, slow speech. At other times there is disturbance of the respiration in speech; for example, the expiration may be broken and interrupted, as when one forces oneself to speak after a rapid and fatiguing run.

Passing on to aphonia, the writer points out that in the respiratory function the abduction of the vocal cords is chiefly automatic, being essential to life, and is concerned with the bulbar centers. On the other hand, phonation is a function of a higher order, because it is connected with speech, and is concerned chiefly with cortical centers. It follows that aphonia is met with principally in psychical cases. The writer proceeds to study with some degree of detail the connection of disturbances of the function of deglutition with mutism and aphonia.

In considering the subject of deafness, it is pointed out that the cochlear nerve, which serves a most important function of psychical life, namely, hearing, is chiefly connected with cortical or cerebral centers; whereas the vestibular nerve, which furnishes impressions which under ordinary circumstances do not arrive in the field of consciousness, serves a function of automatic life, and is chiefly connected with bulbar and cerebellar centers. From this follows an important clinical fact, namely, that a labyrinthic or retro-labyrinthic lesion (usually an injury to the base of the skull) involves generally both of the sensorial mechanisms, while a central lesion, cerebral or cerebellar, affects usually only one of these mechanisms; and since an organic cerebral lesion never, perhaps, causes complete deafness (too little is yet known of the cortical centers of hearing, even if there be one in each cerebral hemisphere or not), it is consequently an organic cochlear lesion which causes grave or total deafness, and is concerned, at least for a certain period of the disease, with disturbance of the mechanism of equilibrium. The traumatic lesions, which cause complete unilateral or bilateral deafness, are especially fractures, direct or by *contre-coup*, of the temporal bone. In cases of deafness from organic causes, in addition to deafness itself, there are symptoms of cochlear irritation (subjective noises), and there are more or less grave disturbances of equilibrium (uncertainty in the erect posture and in walking, with a tendency to fall towards the injured side), vestibular nystagmus, vertigo with nausea and vomiting, etc. Psychical deafness differs from organic in being almost always complete, and in not being accompanied by symptoms of cochlear and vestibular irritation.

The writer makes a careful study of the differential diagnosis of organic, psychical and simulated deafness. Among the many points that he mentions, the following are perhaps the most important: The really deaf person looks you straight in the face when you speak to him. He follows with attention the gestures and the movements of the mouth of the speaker. He willingly furnishes detailed indications of his illness, and gives precise replies during the functional examination, which renders it possible to accurately estimate the power of hearing, etc.

The psychical deaf person is often apathetic and indifferent; sometimes he is hilarious or fatuous; and sometimes he presents the physiognomy and behaviour of a psychopathic.

The malingerer is sad and diffident. He avoids the glance of the interrogator, prefers to keep his eye fixed on the ground, replies evasively to questions, and sometimes adopts a voluntary mutism or the rigidity of an automaton, which it is difficult to make him give up. He lends himself very unwillingly to functional examination,

and gives replies which are generally not very precise, and are sometimes evidently false. Further, and this is most important, he refuses general narcosis when it is proposed as a method of cure.

When a loud and unexpected noise is made near the ear of a patient who hears normally, we may observe certain reflex actions. Sometimes there is a brusque turning of the head, or even of the whole body towards the point whence comes the sound. Sometimes there is a quick winking of the eyelids of both eyes, or of the eye only which is nearest to the sound. This reflex is rapidly exhausted, particularly if the sonorous stimulus be renewed rhythmically. Sometimes this reflex is limited to the eye on the side corresponding to the ear which hears best, or it may be quicker on that side. This reflex has been studied by the writer and by Prof. Amedeo Herlitzka by the means of graphic method. It is a reflex of cochlear incidence, and the latent time is about $\frac{5}{100}$ of a second. Some persons with good hearing succeed in inhibiting all reflex action. On the other hand, a loud sound may occasionally cause the reflex in very deaf people.

The article concludes with a few paragraphs on the therapy of such cases as have been under consideration. In the psychical forms of mutism, aphonia or deafness, it is often advantageous to resort to psychotherapy as well as physical methods of cure. Good results have been obtained by treating patients suffering from mutism and functional deafness by a kind of sound-bath in a very resonant room, where by means of organ-pipes intense sonorous vibrations of different pitch are produced.

But the method of therapy, which has been most successful in the hospital to which the writer is attached (Prof. Gradenigo is Lieutenant-Colonel in the Medical Service of the Italian Army), is that of general narcosis, produced preferably by ethyl chloride, chloroform, or the *liquore sonnifero dello Zambelletti.* It must be understood that it is illegal to put an Italian soldier under the influence of an anesthetic without his consent. Patients who are anxious to be cured are always very willing to undergo this treatment, and even demand it peremptorily. Sometimes the willingness or unwillingness to undergo this method of treatment serves to discover a malingerer. Usually, if the treatment is successful, when the patient wakes up from the narcosis, he falls into a profound hysterical crisis with various nervous disturbances, feeling of faintness, profuse sweats, etc. In other cases excellent results have been obtained in psychical mutism by motor re-education of the movements of respiration and of articulation.—*Journal of Mental Science.*

SYPHILIS OF THE NERVOUS SYSTEM.—Pathological, Serobiological and Clinical Criteria with Especial Reference to Treatment.—David J. Kaliski and Israel Strauss, *American Journal of Syphilis*, October, 1918, in an elaborate discussion of the subject, with detailed description of extensive observations and experimental work, arrive at certain definite conclusions, which may be briefly stated as follows:

All forms of syphilitic involvement of the central nervous system, including the so-called parasyphilitic diseases, are due to the invasion of the neuraxis and its appendages by the Treponema pallidum.

The reaction on the part of the invaded tissue differs markedly in the various clinical types of the disease.

The localization of the disease process is of importance in diagnosis and prognosis, and in the application of therapeutic measures. Foci of disease which are accessible to intravenous and combined therapy may be eradicated by intensive treatment provided the organisms have not become resistant to the drugs now at our command.

Neurones which have been destroyed cannot be replaced; and the function of an active physiologic area cannot be restored if the destruction has been extensive.

Cerebrospinal syphilis, involving one or all of the structures of the nervous system, is a disease essentially of younger individuals and occurs comparatively soon after infection with syphilis. It is similar in its pathology to active syphilis elsewhere in the body. There is a great tendency towards involvement of the blood vessels of the neuraxis.

Tabes dorsalis is a primary neuronic degeneration to be differentiated from pseudo-tabes due to an exudative inflammation of the meninges in the region of the nerve roots and posterior columns. Whether optic atrophy of the tabetic type is always a primary ascending degeneration and analogous to the primary neuronic degeneration of tabes or is occasionally due to an exudative or interstitial lesion of the optic nerve is a mooted question.

In dementia paralytica the toxic action of the Treponema pallidum causes wide-spread destruction of neurones with an active mesoblastic response. Similar lesions of more circumscribed extent and with a milder degree of reaction have been found in cases clinically not general paresis. Whether these lesions are to be looked upon as forms of cerebral lues or possibly the forerunners of true dementia paralytica is as yet doubtful.

Infection of the nervous system occurs by lighting up dormant foci of treponemata within the central nervous system or by invasion of the neuraxis from without probably by the carrying of virulent organisms by the blood from other viscera.

The cerebrospinal fluid does not convey the infecting agent to the nervous system, but in its capacity of carrying waste material from the brain and cord it is secondarily contaminated.

The cerebrospinal fluid should be examined in every case of constitutional syphilis before pronouncing the patient cured even in the absence of subjective and objective symptoms of nervous involvement. This is of importance in view of the possibility of early infection of a latent type as evidenced by positive biological reactions in the spinal fluid even with a negative Wassermann reaction in the blood.

A large percentage of constitutional syphilitics show some abnormality of the spinal fluid in the early stages of the disease although few give physical signs indicative of involvement of the central nervous system. Whether these changes are due to the general syphilitic toxemia or are definitive signs of actual invasion of the neuraxis by the treponemata is as yet a mooted question. Most of these patients eventually give normal reactions, but about 12 per cent. persist in giving abnormal reactions in the fluid. Inasmuch as this number corresponds closely with the percentage of individuals who eventually develop nervous syphilis, it seems justifiable to look upon the persistence of abnormal spinal fluid reactions as the earliest sign of invasion of the nervous system by the Treponema pallidum.

The presence of a positive Wassermann reaction in the blood means active or latent syphilis. A positive Wassermann reaction in the spinal fluid signifies invasion of the central nervous system. A negative Wassermann reaction in the spinal fluid does not exclude the presence of syphilitic involvement of the nervous system. This is especially true of cerebral endarteritis. A negative Wassermann reaction in the spinal fluid after treatment is not absolute evidence of the substance or cure of a once existent lesion. A persistently positive Wassermann reaction in the spinal fluid is not inconsistent with an apparently stationary lesion and clinically arrested case. A negative Wassermann reaction in the blood in the presence of a positive reaction in the fluid does not signify necessarily the localization of the syphilitic lesion to the central nervous system. Most of these patients have in addition to the nervous involvement syphilitic lesions in other viscera of the body and should be treated by intravenous or combined treatment.

In all diagnostic, prognostic and therapeutic decisions due weight should be given both to the clinical aspect of the case and to the laboraory data ascertained by an examination of the blood and spinal fluid.

The biological reactions in the spinal fluid are influenced by a number of factors among which may be mentioned treatment by intravenous and combined methods, intraspinal treatment of various forms, repeated lumbar puncture and temperature producing sera, *e. g.*, tuberculin. The reactions may also disappear spontaneously during the course of the disease.

The treatment of constitutional syphilis must be intensive and should be kept up even after the blood Wassermann is negative in order to prevent involvement of the nervous system. If the Wassermann reaction in the blood remains persistently positive, treatment can never be wholly suspended. The same applies if the reaction in the spinal fluid persists.

The methods of treatment of cerebrospinal syphilis, tabes dorsalis, and general paresis and the possibility of a cure of these diseases are discussed in detail.

A plea is made for more intensive intravenous treatment of syphilitic diseases of the central nervous system.

The practice of intraspinal medication is subjected to critical review on theoretic grounds and also from the standpoint of results achieved. The physiology of the spinal fluid is discussed in detail especially in relation to the question of the direct introduction of arsphenamine and medicated sera into the cerebrospinal fluid.

Arsphenamine and immune bodies pass the barrier of the choroid plexus and appear in the spinal fluid after intravenous therapy. It is shown that after therapeutic doses of arsphenamine intravenously arsenic is found in the spinal fluid in greater concentration than can be effected by the introduction of salvarsanized serum or arsphenamine into the fluid. An explanation is offered for the greater permeability of the choroid plexus to drugs circulating in the blood stream after intraspinal procedures.

Syphilis of the nervous system is best combated by prompt recognition of the disease followed by intensive treatment as outlined in the text. The intensive and prolonged use of arsphenamine intravenously combined with the exhibition of mercury and iodides has given the best results. Intraspinal medication is of occasional and secondary value only. It may be tried in selected cases after intravenous and combined therapy have proved ineffectual in the event that the biological reactions in the spinal fluid are positive. Re-educational measures are of great value in the treatment of ataxic patients.

A Case of Spinal Cord Tumor.—Forest Staley, *Jour. Missouri State Medical Society*, December, 1918, exhibited the following case before the Washington University Medical Society:

Patient, a woman 24 years of age, married, without children, came into the hospital, October 3, 1918, with a chief complaint of paralysis of both legs. Family and past histories negative. The onset of the present illness began when the patient was 16 years of age. The first symptom noted was difficulty in walking, especially when lifting feet. About three months after onset of illness the symptom had become aggravated and she would drag her feet when walking. Four months following onset it was almost impossible to move about. She went to the family physician, who pronounced her condition as a progressive myelitis. Six months after onset of illness patient had lost completely the use of her legs. The treatment up to this time had simply been electrical treatments advised by the family physician.

About eight months after onset of illness she was completely paralyzed and has remained in this condition since. For the past eight years she has been going to various practitioners, including osteopaths, chiropractors, Christian Science healers.

Present examination shows a complete sensory and motor paralysis below a line on a level with the ensiform cartilage. Deep pressure sensation, however, is everywhere present down to the toes, and joint sensation is present but impaired. Pain, temperature and touch are completely lost below a line previously mentioned. There is tender-

ness over the fourth dorsal vertebra, which corresponds to the sixth spinal segment. Blood Wassermann and spinal Wassermann were negative.

Patient was operated on October 10th, and a laminectomy was done. On opening the canal no extradural fat was encountered and what was taken to be the dura bulged up against the bone. An irregular, nodular-looking mass lay to the left of the cord and at first was taken for an intradural tumor. It extended out into the transverse process of the fourth vertebra. The spinal cord did not pulsate at the level of this mass. The tumor, it further developed, was found to be extradural and through the center of it ran what was taken to be the fourth root. The tumor was readily dissected from the dural surface and removed. It was noted that the tumor had eroded the body of the vertebra on which it was resting. The rest of the tumor was removed with a curette and it was found that it extended throughout the left lateral side of the vertebrae, and what was taken to be the aorta could be seen pulsating at the base of the cavity.

Postoperative course was entirely uneventful. As yet there is no marked improvement in patient's condition, although there are a few definite points to be noted. Now she has the sensation of pain to pin-prick over the lower extremities. The sensation to pin-prick is keener on the back of the legs than in front. Patient still has no voluntary movements of toes, but the toes move much oftener now than before operation involuntarily. Before operation patient was absolutely sure that she had no movement in the rectis abdominis muscle, but now this muscle can be contracted. There is still no sensation in the anterior abdominal wall. Reflexes are as before operation. At times patient states that there is an indefinite sensation, tingling in character, which is present in the lower extremities—she did not have this before operation.

It is too early as yet to say just what the final result will be, but certainly there is some improvement.

The microscopic section shows the tumor to be a typical fibroma and the diagnosis is, therefore, a fibroma of the spinal meninges, extradural.

"War Psychoses and Psychoneuroses."—Lieutenant-Colonel F. W. Mott, in a clinical lecture before the Medico-Psychological Assoc. of Great Britain and Ireland, *Jour. of Mental Science*, said there are two conditions in connection with shell shock—commotion and emotion. In the old days, when the soldier came into the hospital and one had to learn from him what had happened, it was all shell shock. But since we have got the new Army Form, we know whether he was blown up or not. It is probable that many of these cases were "shell shy." Only those really have shell shock who are blown up and lose consciousness, and there is evidence of a condition arising which may produce organic change. If there is commotional shock, there is always the possibility of emotional shock at the same time, and those two factors are often combined in a case. And then you have to consider, as of even greater importance, the make-up of the individual. If he is of psychopathic temperament, he will not stand the effect of either emotional of commotional shock in the same way as will a normal individual. Now, very much depends on whether the person who is the subject of shell shock was in a closed space, or in an open space, when the shell burst. If a shell bursts in the open, there is plenty of room for the vibrations, the compression and decompression, which take place, to be lost, and in that case it is more likely to be emotional shock which has caused the man's condition. For example, if a man is in a dug-out, or a "pill-box," or in a narrow trench, and a heavy shell bursts in it or on it, there are produced all the effects of repercussion, and under these circumstances the explosion is more likely to cause physical changes in the man. Being questioned, officers who were present on such occasions, have said that the man could be seen about dead in various attitudes, or in an unconscious condition. In one case, that of a pill-box, a 9.2-in. naval gun had turned it up, and all the men who were inside

it were killed, the shock having been tremendous. We know what happens when a bomb is dropped in a roadway; powdered glass is found all over the road, showing that there must be a tremendous air current caused by the explosion. The mischief is caused by decompression; it is that which is responsible for the changes seen in the brains of the fatal cases exhibited. Those who are not killed by such an explosion in a dug-out have a pulse which is scarcely perceptible. Perhaps there is also bleeding from the nose and ears, the muscles are flaccid, perhaps they are in a hypotonic condition, and in addition there is, possibly, incontinence of urine and of feces. Altogether, the resulting condition is one of marked collapse. When patients are in such a condition—conscious or semi-conscious—their perceptions are materially interfered with. Everything seems to them to be dark and depressing, and though they seem to apprehend what one's questions are, it is difficult to ascertain what is their mental state. Perhaps their movements lack precision and are without purpose. Lumbar puncture is sometimes done at clearing stations, and it is then found that the fluid comes out under pressure. It may contain blood, and will contain more albumin than normal cerebrospinal fluid, which is practically free from albumin. So lumbar puncture is a very useful way of dealing with the case therapeutically, as well as for diagnostic purposes. Afterwards, the patient always complains of severe headache; there is nearly always tremor, also insomnia and dreams, generally of a terrifying nature. The following is an illustrative instance. An officer only remembered a flash of light when the shell burst; he had a vision of arms and legs flying in the air. He had complete retrograde and anterograde amnesia. He could not remember going to France, nor travelling up to the Front, although he had written letters describing his journey and his experiences there. In these respects his memory was a complete blank, which could not be made good afterwards. When a man is blown up, he may have contusion as well, but these cases of external injury sufficient to account for the concussion, are not now under consideration. The whole wall of a dug-out may be blown out, or a beam in it may fall on a man, or it might hit him in the back. That accident will produce sufficient bruising to show that concussion is the cause of the symptoms, rather than being the condition which "windage" will sometimes produce. Windage as a factor has been a good deal disputed, but it is now generally recognized that if a shell bursts within a distance of 10 meters it is liable to produce these conditions. Sections are shown from the first case of the kind which has been described. Unfortunately, in the fatal cases the notes are not very complete, and, of course, with large numbers of cases coming down from the Front, one can understand the difficulties of getting full notes. But it was stated in the notes that this particular man had, six months previously, been getting very nervous and apprehensive, though he was a good soldier. The day before he was evacuated a number of shells had burst near him, but had not knocked him out. But then there came the influence of repercussion. He was in a dug-out, and a large shell burst close to him, and he then became maniacal, as did many of these cases, without losing consciousness. And he evidently had visions of Germans attacking, because he constantly exclaimed, "Keep them back!" It became necessary to give chloroform and morphia to quieten him. He was sent down from the Front to a base hospital, and next morning he awoke, and was, apparently, all right. Then he suddenly died. The *post-mortem* examination was made by Capt. Armstrong, who reported that the only condition found which was abnormal was the state of the lungs and heart. The right side of the heart was markedly dilated, and both cavities were full of blood, and there was hemorrhage into the lung. It is known that, when animals are exposed to these high explosives in a closed space, there ensue marked hemorrhages into the lung; in fact, the lung condition is a very serious one. Possibly such hemorrhage is due to the compression and decompression which take place. In this case, too, there is a little sub-pial hemorrhage, but not very much. But when the nervous system is examined, one does not find the punctiform hemorrhages in the white matter of the

brain which are to be seen in cases of carbon monoxide poisoning. It makes one think of the possibility, when a man is knocked over by a shell without sustaining visible injury, and is buried for some time, that he may have been gassed at the same time. If a shell has burst in a closed space, or if a mine has been exploded near, the carbon monoxide gas formed from imperfect oxidation would filter through the earth and poison the enclosed spaces, wherever they may be. Some of these cases die from the combined effect of shock and gas-poisoning. In this case, in the medulla, in the internal capsule, in the pons, and in the cortex of the brain—indeed, throughout the central nervous system—there are hemorrhages into the sheaths of the vessels. A specimen was exhibited under a microscope showing a vessel in the median raphe of the medulla with a hemorrhage into the sheath close to the vagus accessorius nucleus, which controls the heart, so that may have been the cause of the sudden death. The mania which he had was due largely to the condition of the blood-vessels of the brain. There was marked cortical anemia, but great congestion of veins, and hemorrhages all through the brain substance. But the changes in the ganglion cells were very remarkable. There was not much change in the Nissl granules; those in the middle of the cortex, except in the vagus accessories, were well preserved. And when the Nissl granules are seen in a normal state, the cells have, clearly, functioned normally. This man had not lost consciousness, but was in a maniacal state, due to exhaustion of the brain, following upon the anemia, the venous congestion, and the other conditions found. He died suddenly, owing to the failure of the respiratory and cardiac nuclei.

Another case in which the man was brought down in a state of complete unconsciousness, was said to be one of shell-shock. There was no visible injury, and yet the corpus callosum, which forms the roof of the ventricles, was found to have been ruptured through. Under the microscope, hemorrhages are to be seen in the white matter of the brain. In that patient every cell of the brain was affected. The man never recovered consciousness. The Nissl granules and the cells of Purkinji in the cerebellum are found to have disappeared. One of the commonest symptoms of neurasthenia, especially the shell-shock variety, are the tremors and the muscular weakness, as well as dizziness. The other case shows a much more marked change in the cells of Purkinji than in any other cells in the central nervous system; it shows chemical change and the absence of Nissl granules. One may naturally ask whether the changes found in the cerebellum may not account for the tremors. The cerebellum acts as the organ of reinforcement; indeed, it is *the* organ of reinforcement, and if it is removed, asthenia occurs. The conditions found in these cases seem to point to less of this reinforcing power on the part of the cerebellum. Crile held much the same view. Crile examined the central nervous system, as well as the endocrine glands, in the case of a soldier who had experienced extraordinary hardships, having had a forced march of 180 miles, and been killed in the battle of the Marne. Crile found in this case the same change in the cells of Purkinji, and he associated it with that other theory concerning the adrenal glands which there is not time to enter into now. The preparations shown are interesting from two points of view. In one of them is an increased vascularity of the brain without the changes in the nerve-cells which have been described. That is to say, there is venous congestion; the man retains consciousness, but is in a state of mania, as patients so often are after shock. Sometimes they become dazed and wander away, and they have no correct idea of what they are doing. The other is the case of a man who was completely unconscious and never regained consciousness at all. In such a case as the last-named is found much more extensive changes in the substance which we believe is the essential energy substance of the nerve-cells, namely, the kinetoplasm.

That leads to another class of case, of which we have had several examples here, in which there is delirium, what is called "dream delirium." These patients have day-dreams as well as night-dreams, and these terrifying dreams go on for months. They are usually of battle scenes; perhaps a recurrent dream about some terrible experience

they have passed through. You know such cases are not fit to be returned to the Front. But dreams come rather from emotional experiences. A man who is knocked out with commotion is not so likely to dream as is the man whose disability is due to emotion.

Another class of case is thus illustrated: A man is brought in, and he has a sort of mindless expression: he is, indeed, in a state of complete anergic stupor: he notices nothing, and apparently sees nothing. You may not be able to get answers to your questions, or if you do you soon know there is mental confusion. He does not apprehend what you are saying to him, and his associations, as to both time and place, are upset with a further stage of complete anergic stupor and mindless expression, the patient taking no notice of anything. And what is very interesting is the fact that when these men recover consciousness sufficiently for them to take a little interest in their surroundings, they behave just as children do; they look at picture books, and they not only use the words which young children use, but the voice is modulated on the same juvenile standard. After a time they seem to recover. Visitors here have said the condition was dementia precox. But they have got well. There is one case in particular. At first he sat in a crouched attitude, and took no notice of anybody. Two soldiers took a pride in trying to get him well. He began to improve. It took six months, but eventually he got well, and before he left he was able to play a game of billiards. These cases, in the first stage, must show a considerable change of a functional character in the kinetoplasm of the nerve-cells. Some of the cases do not recover at all, but go on to permanent dementia. There was one case, that of a New Zealander, who was buried. We could get no history from him. He sat up and seemed mindless, and yet an expression seemed to come into his face. He performed scratching movements. He had been buried for a considerable time, and this movement of trying to scratch his way out had become stereotyped.

These cases form an interesting study from a psychological point of view, because they show how strong are the instinctive reactions of defense. Nearly always in hysterical conditions we see defense against intolerable situations. A man is blown down by a shell explosion, and when he gets up he has a pain in his arm; and instinctively he simulates hemiplegia, or brachial monoplegia, by autosuggestion, and by it he gets out of an intolerable situation. He is sent back to a base hospital, but do you think he is going to get rid of it? He will not unless you persuade him. One of the best means of persuading these patients is to assure them that they are not now of much use as soldiers, but may be made use of in civil life. That serves as a fine tonic to begin with. The personality of the individual makes an extraordinary difference in these cases: it is really a process of counter-suggestion. All our cases are not pure shell shock by any means. Among officers a large proportion are pure shell-shock cases; but among the men there are cases of hysterical paralysis and other signs of hysteria. It is very important to remember that there may be an organic basis, with a large functional halo, and we get cases of injury of nerves, in which the man has been put up in a splint for some time. He has got an idea he is paralyzed, and there is a little stiffness in the joints. That gets fixed in his mind. Daily massage, electrifying and sympathetic treatment is the worse course you can adopt in these cases. If you want to make the condition permanent, that is the way to do it. Vigorous counter-suggestion is best.

You will notice the black footprints on the floor; these are for exercises. A man has a spastic condition of his legs, gives a Babinski on both sides, but the greater part of his disability was functional, so we have removed that halo of functional disability and he can now walk well. That is what we need to find out; how much is functional, how much organic. The French lay great stress upon this. They say, "we diagnose the difference between organic and functional disease by the effect of treatment." They treat the cases right at the Front, by faradism and persuasion, and they sent 80 per cent. of their hysterical cases back, and are still doing so. We are getting far fewer of

these cases than formerly, since they are sending 60 per cent. to 80 per cent. back by treating them at the Front, not letting them get to the base and think about it; otherwise they will fix it up. The sooner you get them under treatment the better. This illustrates the fact that you cannot make a soldier out of a psychopath, or out of a timid man.

The son of an undertaker had been conscripted and the father felt that the boy had not enough courage, so, in order to try to make him courageous, he made the son get into a coffin he had constructed, and his mother came at night wrapped in a sheet, to make him used to ghosts. Then the father died, and the brother came, and he said he must keep up the reputation, and he used to shut him in the room with the corpse to encourage him. But it had no good effect. This lad was conscripted, and was sent to France. He managed to get through his shooting by a non-commissioned officer firing off his rounds. He had not done bomb-throwing. They gave him dummy-bombs, and he did well. Then he was sent up. The first time he got a live bomb he threw it into the air and fell down in a faint. He was of no use.

It pays to go into the family and personal history of these cases. Of 100 cases attending the clinic here, and 100 cases in the surgical wards in the hospital across the road, it was found that 80 per cent. of the neurasthenic and "shell-shy" had something in their history which showed they were neuropathic in some way, whereas only 20 per cent. of the surgical cases had such a history. Therefore, the most important factor in connection with insanity is the inborn tendency of the individual. We talk of "exhaustion psychosis," as if exhaustion will produce this condition, yet of 10,000 Serbian prisoners, exposed to the most terrible conditions which could be imagined—starvation, typhus fever, exposure to wet and cold—only five of them became insane.

SYPHILITIC MENINGITIS IN INFANTS AND YOUNG CHILDREN WITH REPORT OF A CASE.—Perry A. Bly, *American Journal of Syphilis*, October, 1918, in reporting this case, comments upon the paucity of reported cases of syphilitic meningitis in infants and young children. The similarity of the clinical picture to that of tuberculous meningitis, and the frequent negative microscopic and serologic findings in the examination of the spinal fluid, make the diagnosis difficult; especially when the family and antecedent histories are vague and unreliable. The reactions in syphilitic meningitis may resemble tuberculous meningitis or they may be insidious or latent. Inherited syphilis should be suspected when the meningitis does not present the classical picture of ordinary meningitis, and when the stigmata of hereditary syphilis are suggested. Spirochetes are not generally found in the spinal fluid, and the Wassermann reactions in the blood serum and spinal fluid are often negative, becoming positive after recovery. Syphilitic meningitis is part of a general septicemic disease in the first few weeks of life, but after two years of age the meningeal symptom-complex is a lighting-up of old reactions on the part of the already damaged nerve cells. The therapeutic test is conclusive.

In children, lumbar puncture is simple and, if carried out under strict aseptic precautions, is harmless. Vigorous mercurialization for a few days will often transform a negative Wassermann reaction into a positive one.

The author's case was an extremely emaciated male infant, twenty months old, of Italian parentage, both of whom gave a four plus Wassermann of the serum. Another child of these parents, born two years before, lived six days.

The patient was born at term after a normal labor. At birth there were numerous palmar and plantar syphilodermata, which soon disappeared following the use of some "salve." Until two months before death, the parents say that he appeared to be in good health although undernourished. He was breast-fed for eight months, and after that received a miscellaneous diet. When eighteen months old, the parents first noticed a gradually increasing irritability, together with a slight opisthotonos; at first only occasionally, but with steadily decreasing intervals between attacks. A

physician was consulted, who was acquainted with the specific history of the parents, and who prescribed mercurial inunctions. Admitted to the hospital eighteen hours before death. The central incisor teeth were present and appeared normal; the skin free from scars or eruption. The body was in opisthotonos with general convulsions, affecting, particularly, the respiratory muscles, and causing partial asphyxia during the attacks. Temperature, 101.4°; pulse, 100; respirations, 36; pupils dilated, equal, and sluggishly responsive to light; spinal fluid slightly cloudy, under moderately increased pressure. A centrifugal specimen was negative for bacteria by ordinary staining and cultural methods. Smears prepared with India ink and with the Fontana stain showed numerous spirochetes. The blood serum Wassermann reaction was four plus and there was complete fixation with .4 c.c. of spinal fluid. Necropsy refused.

THE EARLY DIAGNOSIS AND TREATMENT OF TABES DORSALIS.—Loyd Thompson, *Journal of the Arkansas Medical Society*, 1918, Vol. XIV, p. 239, writes that the sensory symptoms are both subjective and objective, the former being in the majority of cases the earliest symptoms of the disease. The subjective sensory symptoms consist of pains of varying location and intensity, the most characteristic ones being the so-called lightning or lancinating pains, and certain paresthesias. Other pains of a less severe nature but more permanent are noted. The chief of these is the so-called girdle pain which the patient describes as the sensation of a tight belt around the body. Certain paresthesias such as numbness, formication, tingling, prickling, the sensation of walking on velvet, as if cold water were running over the body, the feeling of cobwebs on the skin, etc., are often observed.

Of the objective sensory symptoms the most frequent is analgesia which affects the cutaneous surface, and also the bones, joints and muscles. Areas of hyperalgesia are also common but less symmetrically located and less frequent. Anesthetic areas are very frequently observed in tabes. A striking symptom in some cases is an impairment of stereognosis, the patient being unable to distinguish by the sense of touch such objects as a key or coin. Motor symptoms in tabes consist of ataxia, which may be more than that of locomotion, involuntary movements, and paralyses. The ataxia is not, as a rule, an early symptom of tabes, usually developing after sensory symptoms have been present for some time. The ataxia, however, may be the first symptom to call the attention of the patient or the physician to the true nature of the condition. The paralyses found in tabes consist of monoplegia, hemiplegia and paraplegia, paralysis of the tongue and larynx, facial paralysis and ptosis. Anomalies of pupillary reaction are found in the vast majority of tabetics. Of these the so-called Argyll Robertson pupil is the most important. This phenomenon, which consists of a loss of light reflex, while the reaction to accommodation remains intact, is found in from 50 to 70 per cent. of cases. Reflex Symptoms.—Diminished or absent deep reflexes, especially the knee jerk, is one of the earliest and most frequent symptoms of tabes. It is usually bilateral but may be confined to one side. The superficial reflexes may or may not be disturbed. The most important and frequent of the visceral symptoms are those referable to the stomach. The so-called gastric crises, which are of sudden onset, may occur very early in the course of tabes, in fact, may be the only symptom observed, the patient being treated for other types of gastric disorder. Intestinal crises are of rather rare occurrence, are characterized by marked diarrhea but without pain. The bladder is the seat of some of the earliest and most constant symptoms of tabes. Nephritis crises have been described, but may be due to renal colic. The genital organs are very frequently affected in tabes. Diminution of the sexual appetite and even impotence are observed in about 50 per cent. of the cases and is sometimes preceded by an excessive sexual appetite. Laryngeal crises occur quite frequently and consist of spasms of the laryngeal muscles. The bones are very frequently the seat of spontaneous fracture due to rarefaction and decalcification.

The so-called Charcot's joint, which sometimes occurs in tabes, usually is first manifested by an abnormal range of motion. The author's experience now covers more than 250 injections, and the clinical results are very satisfactory.—*American Journal of Syphilis.*

Diagnosis and Treatment of Syphilis of the Central Nervous System with Special Reference to the Use of Novarsenobillon.—Hildred Carlill, *The Lancet*, 1918, Vol. CXCIV, p. 249, observes that the possibility of a syphilitic basis should be considered in every case of nervous disease. Nervous syphilis can be proved by examination of the cerebrospinal fluid. The examination of the serum, whether the Wassermann reaction is positive or negative, is of little value in the diagnosis of these cases. Provided that the diagnosis is made early, and prompt treatment given in adequate quantity, syphilis of the nervous system appears to be curable in very many cases. The real result of treatment can only be determined by repeated examination of the cerebrospinal fluid, hence the absolute necessity of painless lumbar puncture. Cases in which this operation has been contraindicated have not been observed. Some cases of curable meningovascular syphilis are diagnosed as incurable dementia paralytica, and treatment is withheld. Often the precise diagnosis can only be made by watching the result of treatment; therefore all cases should have treatment. Even in some cases of long-standing tabes dorsalis the syphilis appears to be entirely curable by treatment, and in nearly all cases symptoms can be greatly alleviated by "606." Novarsenobillon, in the author's hands, has proved a safe and most efficient remedy against the protean ravages of the Spirochete pallida. Galyl is not recommended. The outlook of sufferers from early neurologic syphilis is very bright, and will be brighter still when the general standard of knowledge of neurologic diagnosis is less inadequate than it is today. If the profession and the public seize and apply our present knowledge of syphilis it is not too much to hope that the future generations of students will learn of tabes dorsalis and dementia paralytica only from the textbooks. Abolition of ankle jerks is an early sign, and often the only one, of arsenical neuritis, and may be demonstrated in the absence of any subjective symptoms.—*American Journal of Syphilis.*

Studies on Hysteria.—Hurst and Symns, *Review of Neurology and Psychiatry*, January, 1918, as a result of their investigations into the various hysterical stigmata support the view of Babinski that these stigmata are produced by unconscious suggestion of the physician in the course of the examination of the patient.

The following investigations were made:

(1) *Pharyngeal Anesthesia.*—The results of the observations are tabulated according to a scale, beginning with 0 (complete anesthesia), and passing to 7 (maximal reflex making laryngoscopic examination quite impossible). The figures show that pharyngeal sensibiltiy is no more deficient in patients with hysterical symptoms, than in non-hysterical cases, and it varies in a similar manner. When care is taken to avoid suggestion complete pharyngeal anesthesia is never found. The conclusion is reached that such anesthesia is not a stigma of hysteria, and that when habitually found it must be produced by involuntary suggestion on the part of the observer.

(2) *Experimental Observations on the Signs and Symptoms of Malingering, Hysteria and Organic Nervous Disease.*—Hysterical symptoms being produced by suggestion have the characteristics which the patient believes to belong to the symptom, either from his own knowledge or that suggested by the examination. This view was tested by the examination of twenty-nine medical students who had not yet acquired any clinical knowledge. They were each told to pretend that they had been in a railway accident, and that they were attempting to swindle the railway company by claiming compensation because of paralysis of the right arm and leg, which they alleged had

resulted. The symptoms and signs obtained, as a result of the investigations, correspond to those occurring in patients suffering from hysterical paralysis. Many of the symptoms were produced as the result of leading questions, just as in the suggested symptoms of hysteria. The deep and superficial reflexes were normal.

(3) *Narrow and Spiral Fields of Vision in Hysteria, Malingering and Neurasthenia.*—Hysterical patients do not spontaneously complain of disabilities resulting from a narrow field of vision. But if a narrow field is produced by testing with the perimeter the patient may subsequently complain of considerable inconvenience. The perimeter invariably results in suggesting a narrow visual field, however carefully it is used. The writers found also that if the examination was continued after the first field was marked out a spiral field was always obtained identical with that which has hitherto been regarded as a stigma of hysteria. An inward or outward spiral has been produced in the same eye on different days according to the direction in which the white disk of the perimeter is moved. By testing with the finger instead of the perimeter no narrowing of the visual field was found in the "malingerers" described in the previous communication.

(4) *The Supposed Association of Hysterical Anesthesia of the External Ear with Hysterical Deafness.*—In cases of organic deafness anesthesia was frequently found in a marked degree when suggestion was an element in the physical examination. Similar results were obtained in hysterical deafness, and the writers conclude from their observations that the supposed association of hysterical anesthesia of the external ear with hysterical deafness is a complete fallacy, and that anesthesia is likely to occur in a deaf ear, whether the deafness is organic or hysterical, so long as the individual is sufficiently suggestible and not too well educated.

(5) *A New Group of Hysterical Stigmata.*—If hysterical symptoms are produced by the observer, hysterical stigmata may be multiplied. This point is proved by the invention of three new stigmata which were invariably found when looked for in three suggestible patients. These stigmata were: (1) An outwardly directed spiral field of vision; (2) anesthesia of the nose; and (3) anesthesia of the skin 'round the umbilicus.—*Jour. of Mental Science.*

THE RAPID CURE OF HYSTERICAL SYMPTOMS IN SOLDIERS.—Hurst and Symns, *Lancet*, August 3, 1918, observe that certain hysterical symptoms seem to require a prolonged and careful re-education for several weeks to complete the cure. Such symptoms are: The stammer following mutism, tremors—regarded by Babinski as a special neurosis less amenable to psychotherapy than hysterical symptoms—and those contractions which Babinski and Fremont have diagnosed reflex neuroses. From their more recent experience the writers find that prolonged re-education is not necessary in any of these cases, and they now expect recovery within twenty-four hours of commencing treatment. The rapid cure depends on the persistence with the treatment, in spite of the fatigue of the patient and the officer in charge, until the particular symptom is entirely cured, *e. g.*, the mute soldier who stammers upon the recovery of the voice should not be left until the stammer is also cured.

Relapse is rare if a cure has been obtained within a few weeks of the onset, and the liability to relapse in long-standing cases is much reduced if the patient is given open-air occupation, and kept under observation at the hospital for a few weeks before return to duty.

The essential points in the treatment are simple persuasion and re-education continued with manipulation. The atmosphere of encouragement which should be fostered in the ward before the commencement of active treatment is essential for the cure of the case.—*Jour. of Mental Science.*

CEREBRAL EDEMA.—Rawling, *British Medical Journal*, has seen a considerable number of cases presenting evidences of cerebral edema as the result of heat stroke, cerebral malaria, shell shock, etc., and has come to the belief that the condition is due in part to a damage to the veins of the brain and its membranes which reduces their capacity for absorbing the excess of exuded fluid. Lumbar puncture sometimes temporarily reduces the symptoms of the increased intracranial pressure, but at other times it proves of no value, or even yields no excess of fluid, probably due to the blocking of the communication between the brain and cord. The most satisfactory form of treatment has been the performance of a subtemporal decompression with incision crucially through the dura and followed by replacement of the temporal muscle. This permits the escape of the fluid into tissues whence it can readily be absorbed and after some time the normal functions of the cerebral sinuses and veins are restored. In practically all of the cases in which this operation has been performed by the author the results have been very good and quite permanent. The operation is not dangerous, and is recommended for all severe cases in which improvement has not taken place after three months of medical treatment.—*Charlotte Medical Journal.*

CLINICAL PSYCHIATRY.

A CASE OF PATHOLOGICAL LYING OCCURRING IN A SOLDIER.—Henderson, *Review of Neurology and Psychiatry*, states that this case is the only one observed in 1,400 admissions of nervous and mental cases. It presents the usual kind of history and features found in this type of disorder, and it is published not only for its dramatic interest, but more for the important educational and administrative problems it suggests.

Such cases are to be regarded as a form of high-grade mental deficiency. The diagnosis rests on the following mental characteristics: (1) Precociousness; (2) roving disposition with inability to concentrate; (3) blunting of emotional tone—lack of affection, sense of guilt, moral sensibility; (4) lying with inadequate precautions to prevent detection; (5) rather attractive personality; (6) total irresponsibility.

What is to be done with these plausible, dangerous and attractive types? They cannot usually be certified, and prison methods only aggravate the morbid tendencies. The only solution appears to be recognition of these cases in childhood, and treatment in colonies, where they may be suitably trained.—*Jour. of Mental Science.*

EXPERIMENTAL NEUROLOGY.

ELECTROMYOGRAPHIC STUDIES OF CLONUS.—Stanley Cobb, *Johns Hopkins Hospital Bulletin*, November, 1918, gives in detail the results of his work in a few cases studied intensively by means of the string galvanometer. Beginning slowly, the periods between contractions soon shorten to a constant length, and this periodicity then varies not at all with fatigue, and only slightly with change of muscular tension. Clonus was kept up for half an hour in one case. In different individuals the average length of these periods varies only by a few hundredths of a second, the shortest being .12 second and the longest .17 second. From the theoretical standpoint the coincidence of this rate of clonus with the rate of other organic tremors brings to mind interesting speculations in regard to the nature of intrinsic neuro-muscular rhythms.

The apparatus used for recording the action-currents of the muscles studied was the string galvanometer designed by Dr. H. B. Williams and manufactured by C. F. Hindle & Co. This is a standard machine such as is used in "heart stations" for electrocardiographic work. The optical system and recording camera were also the stock

type made by this company, except that a special gear was introduced to give greater speed to the film; with this addition a speed of from 20 to 27 cm. per second was obtainable. For electromyographic work of this kind any string galvanometer might be used with slight adaptation; descriptions of such modifications are given by Williams, Snyder and Forbes. The string used was the one supplied with the apparatus and consisted of a gilded quartz fiber 3 micra in diameter with a resistance of 5,000 ohms.

Electromyography, or the study of the action-currents of the skeletal muscles as applied to the study of clonus is briefly described:

In order to record the electrical changes in a contracting muscle a continuous circuit must be established through that muscle and the string of the galvanometer; thus there must be two electrodes on the body surface, one connected with each end of the string. One of these is applied to the skin just over the belly of the muscle to be studied, and the other is placed over some nearby skin area beneath which there is no muscular contraction. For example, in studying ankle clonus, one electrode is placed over the belly of the gastrocnemius and the other in the popliteal space. In patellar clonus one is over the rectus femoris about 20 cm. above the patella in the mid-line, while the other is fastened to the inner side of the leg about 6 cm. away, over a spot where no muscular contraction takes place during patellar clonus. In this way action-currents of the clonus are alone recorded.

In studying ankle clonus the subject lay prone with the knee-joint fully extended. The skin was washed with soap and water, dried with ether, and the electrodes were then applied to the points designated above. These electrodes were of the non-polarizable type described by Piper and by Forbes. They consist, briefly, of funnels filed off at the small end so as to admit a rubber stopper; a piece of cat's bladder is stretched over the larger end, and a zinc rod is thrust through the rubber stopper into the cell which is filled with a saturated solution of zinc sulphate. The leads from the galvanometer string are attached to these zinc rods and the solution, permeating the animal membrane, makes the necessary electrical connection with the body of the patient.

With the patient in position and the skin prepared, the electrodes are firmly fastened to the appropriate spots with narrow roller bandages. The galvanometer is then set with the string at such a tension that 1 millivolt causes a deflection of 1 cm. on the record. The connections are made with the patient; the resistance of the patient is measured and compensated, and the camera and lights are arranged for the making of the record. Then an assistant sets up ankle clonus by pressing sharply on the ball of the foot. In the case of patellar clonus the procedure is the same except that the patient lies supine and pressure is exerted on the patella to set up contractions in the rectus femoris.

When stimulation was kept up over a long period of time, as in the fatigue studies, it was found that the assistant became tired before the clonus, so it was necessary for the galvanometer operator to change places with him every five or ten minutes. This gave a short hiatus in the continuity of the clonus, but not of long enough duration to admit of much recovery from fatigue.

In some experiments the effect of a light pressure on the ball of the foot was compared with that of strong pressure. No accurate quantitative measurement of these variations in stimulation was attempted because only the grosser variations seemed to cause any corresponding changes in the periodicity rate and size of the action-current.

There is probably no distinct line between clonic and sustained muscular contraction. Voluntary contraction is sustained, giving a tetanic electromyogram, but certain individuals can voluntarily induce a clonus. It is notable that such a clonus falls into the usual rate of about 7 per second, but it is less regular than the pathological clonus studied in this paper, and it can only be elicited by people with hyperactive reflexes or after fatigue of the muscles involved. In this connection it is interesting to remember

that clonus is found after wasting diseases such as typhoid fever. Then there is the great group of hysterical clonus which resembles the voluntary type. Only one hysterical case has been studied electromyographically, but this one shows a definite tetanic (voluntary) rhythm underlying the clonus. It should be of great interest therefore to study all clonic contractions electromyographically. In this way a new diagnostic criterion might be found between hysterical and organic cases. The question would be what difference one might find in the clonus in states of normal psychobiological integration and in states of hysterical malintegration, when compared with the organic cases. In purely organic clonus there is no sign of electrical activity in the muscle between contractions. It is interesting that in one case where the patellar clonus passes over into a tetanic spasm, the rate and the number of action-currents per contraction increases as the spasm comes on, until the tracing becomes that of a continuous contraction.

Most writers on clonus agree with Langelaan who states that clonus is a reflex symptom, or a series of them; and that the stretching which follows a contraction is a new stimulus to the proprioceptors and calls forth another reflex twitch; thus the symptom propagates itself until fatigue or inhibition puts an end to it. If this were the true explanation of clonus we would expect a much shorter periodicity than that which is observed; Snyder found that the reflex time of the knee jerk was about 0.011 seconds. If then clonus was purely a self-propagated proprioceptive reflex we would expect it to have a much higher rate, for in eliciting clonus we keep the muscles stretched, thus stimulating their proprioceptors, which can reflexly cause a contraction in 0.011 of a second; the muscle then relaxes only to find the stretching stimulus still there to set up another contraction. The fact that the average periodicity is 0.15 seconds when the reflex time is only 0.011 must be explained.

There seem to be three theoretical possibilities. First, it may be that the relaxation time of the muscle takes up 0.1 of a second or more. Secondly, a summation of stimuli through the proprioceptors may be necessary to cause the next contraction. And lastly central inhibition may play a role. The first two possibilities should be studied experimentally. For the last there is some clinical evidence already; evidence for the existence of some energy constantly tending to excite muscular contraction, but normally held in check in inhibition. Removal of this inhibition by decerebration, by central lesion, or positive motor effort, causes more or less permanent muscular contraction. There seem to be all degrees, from slight spasticity to permanent contracture, but the interesting point is that whatever the cause of heightened muscular tone may be, the rate of the clonus (or of the tremor in such diseases as paralysis agitans) falls always into approximately the same rhythm.

Following are the author's conclusions:

(1) Electromyography is a more accurate and more easily applied method for the study of muscular phenomena than those formerly applied to clinical observation.

(2) Clonus gives a characteristic electromyogram.

(3) Fatigue does not affect the rate of clonus.

(4) Increased stimulus increases the rate of clonus and the size of the electromyographic waves, but does not change the rate of the action-currents.

(5) The number of action-currents per contraction varies with the type of the clonus.

CONCERNING BRUCK'S NITRIC ACID REACTION WITH SERUM AND CEREBROSPINAL FLUID IN SYPHILIS.—Ikuzo Toyama and John A. Kolmer, *Journal of Cutaneous Diseases*, 1918, Vol. XXXVI, p. 434, found that the Wassermann and Bruck tests with ninety-four serums (the Bruck tests being conducted with fresh active serums) yielded similar results with sixty-five serums, or 70 per cent. All of the positive reactions with both tests occurred with the serums of persons manifesting the lesions of the secondary and tertiary stages of syphilis and undergoing treatment with

arsphenamine (arsenobenzol of the Dermatological Research Laboratories). With the serum of twenty-three persons, or about 25 per cent., the Wassermann tests were negative and the Bruck test positive; eight of these serums were from persons regarded as nonsyphilitic and the rest (fifteen) from persons in the secondary and tertiary stages of syphilis undergoing vigorous treatment with arsphenamine and yielding positive Wassermann reactions on admission to the clinic and prior to the time when the Bruck tests were made. According to the results, therefore, the Bruck test was found to yield presumably about 8 per cent. falsely positive reactions; also that the property of syphilitic serum responsible for the Bruck test probably under treatment for a longer period than the reagin or Wassermann antibody. With the serum of six persons, or about 6 per cent., the Wassermann tests were positive and the Bruck tests were regarded as negative; all of these serums were from persons presenting the lesions of the secondary and tertiary stages of syphilis on entering the clinic and undergoing active treatment with arsphenamine. The results of Bruck tests conducted with eighty-nine serums in the fresh active state and again after inactivation (heating) showed similar results in 85 per cent.; in 13 per cent. the reactions were positive with active and negative with inactive serum; all serums were from cases of secondary and tertiary syphilis undergoing treatment. It would appear, therefore, that active serum is better adapted for the Bruck test than inactivated serum. Preliminary and final readings of the Bruck test agreed in 94 per cent. of serums; with 6 per cent. of serums the reaction was read as positive in the preliminary and negative in the final reading. These serums were from persons in the secondary stage of syphilis and undergoing vigorous treatment; it would appear, therefore, that the precipitate yielding a positive result in the preliminary reading may dissolve overnight and thereby render a negative result in the final reading. For this reason the preliminary reading is considered more delicate but more difficult to interpret and differentiate from the opalescent reactions sometimes yielded by normal serum. Bruck tests conducted with cerebrospinal fluids in amounts ranging from 0.5 to 2 c.c. were invariably negative irrespective of the source of fluid as from normal persons or those suffering with syphilis of the central nervous system and suppurative meningitis; owing to the relatively small amount employed, and from inflamed meninges, as compared with serum, the Bruck test is worthless as an aid in diagnosis. While the Bruck serochemical test is very simple, of great interest theoretically and probably of more value than the numerous other physicochemical tests of Porges and Meier, Klausner, Herman and Perutz, and others, the reactions are less well defined and more difficult to read and more prone to error on the personal equation than the Wassermann reaction and, likewise, probably less delicate and valuable as a diagnostic reaction than the Wassermann test when the latter is properly conducted by experienced persons. —*American Journal of Syphilis.*

THE SUPPOSED RELATION OF THE SYMPATHETIC NERVES TO DECEREBRATE RIGIDITY, MUSCLE TONE AND TENDON REFLEXES.—Stanley Cobb, *American Journal of Physiology*, July, 1918, expresses the opinion that the question of the sympathetic innervation of striated muscle is still far from settled. As the evidence accumulates, the probability diminishes that a simple explanation of tonus has at last been found. For a time the researches in anatomy and physiology had made it seem probably that tonic muscular contraction was due to sympathetic innervation. In this work some experiments of deBoer and Dusser de Barenne were modified and repeated. A series of experiments was done on frogs to test deBoer's observation that cutting the rami communicantes of the abdominal sympathetic in frogs causes a loss of tone in the ipsilateral leg muscles. Sixty-one frogs were operated on in different ways and although the simple cutting of the rami usually seemed to cause the leg to hang lower, no consistently corroborative evidence was obtained from stimulation or degeneration experiments. Seven cats were operated on. In one case simple unilateral excision of part

of the abdominal sympathetic chain was performed; the abdominal sympathetic was cut before decerebration in five cases, and afterwards in one case. The effect of stimulating the sympathetic chain was tried out, also the effect of inhibiting decerebrate rigidity by cerebellar stimulation, with and without an intact sympathetic chain. Besides this, repeated observations were made on six cats, after their recovery from the sympathetic excision, to see if the muscular tonicity or tendon reflexes had been affected.

The following conclusions were reached:

(1) Section of the abdominal sympathetic chain in cats:

(a) Has no effect on decerebrate rigidity, either by preventing its development or its inhibition.

(b) Causes no obvious hypotonicity of the hind legs or tail.

(c) Causes no change in the tendon reflexes.

(2) Stimulation of the abdominal sympathetic chain causes no tonic contraction of the ipsilateral hind leg.—*Johns Hopkins Hospital Bulletin.*

NEURO-DIAGNOSIS.

OPHTHALMIC CHANGES IN TABES AND PARESIS; THEIR RECENT PATHOLOGY AND DIAGNOSIS, PARTICULARLY WITH REFERENCE TO CEREBROSPINAL SYPHILIS.—Israel S. Wechsler, *New York State Journal of Medicine*, 1918, Vol. XVIII, p. 312, from the study of the more recent investigations of the pathology of neurosyphilis, particularly with reference to optic changes, has gained the impression that there is no fundamental difference between tabetic neurosyphilis and so-called cerebrospinal or, better, diffuse neurosyphilis. It seems evident that an inflammatory process is behind every form of syphilitic involvement and that the spirochete is at the bottom of the reaction. Obviously, the inflammatory reaction is in direct proportion to the kind of tissue involved. There is every reason why the meninges should respond more violently than the parenchyma of the brain. The reaction, too, of the vascular, interstitial structures will be of a different nature than that of parenchymatous tissue. But lymph and plasm cell infiltration and mast cells are the fundamental characteristics of syphilis.

This picture occurs in tabes, paresis and optic atrophy, just as it does in interstitial neurosyphilis or, say aortitis. There is, therefore, no valid reason for calling a protean clinical picture cerebrospinal syphilis. In the first place, tabes and paresis are anatomically just as cerebral and spinal, and secondly, the pathology is based in all cases on a similar reaction to the same agent. The writer has, therefore, used the term interstitial, or diffuse neurosyphilis, instead of cerebrospinal lues. The same argument, it seems, holds true when we come to the pathology of special structures, such as the optic nerve. Evidently very careful examination has revealed inflammatory reactions, even in very old cases of optic atrophy. It would seem advisable, therefore, to drop the term primary optic atrophy or, rather, employ it in the sense that the atrophy takes place pari passu with the inflammatory, exudative process. It is equally descending with an inflammatory neuritis, though the vascular changes are not nearly so violent. The deductions to be drawn are quite obvious. Without attempting to deal with the subject of therapy it may be well to point out that if the inflammatory character of optic atrophy will come to be recognized, we may be able to attempt rational and possibly hopeful treatment in cases which have hitherto been the despair of therapeutics.—*American Journal of Syphilis.*

THE REDUCING BODY IN THE CEREBROSPINAL FLUID.—The presence of the normal reducing agent (glucose) in the cerebrospinal fluid has been used as dis-

tinguishing meningism from meningitis, in which this body is diminished or absent. Weil has investigated the glucose content of the cerebrospinal fluid in various conditions. In irritation of the meninges and the resulting congestion the amount of glucose in the cerebrospinal fluid is increased, and this holds good in meningism. But when the cause of the irritation is microbic, the fermentation action of the microorganisms reduces the amount of the glucose; this is specially seen in meningococcic meningitis. In tuberculous meningitis diminution in glucose content is the rule; but in some instances the microbic activity is not sufficient to overbalance the influence of meningeal congestion, and at some stages of the disease the glucose content may be almost normal. In syphilitic meningitis the glucose content of the cerebrospinal fluid is excessive, and in explanation it may be suggested either that the spirochaeta pallida does not ferment the glucose or that the meningeal reactions of syphilitics are aseptic and secondary to infective processes in the medulla or brain.

In the early stage of cerebrospinal fever, when the fluid is clear and shows a number of mononuclear cells, there may be a preliminary excess of glucose; later this disappears, but as the patient recovers the glucose reappears in the cerebrospinal fluid, increases, and during convalescence may, from the predominance of congestion over bacterial glycolysis, be in excess of the normal, as in the preliminary stage. In epilepsy an excess of glucose is the rule, but in hysterical seizures, however frequent and apparently serious, the glucose content of the cerebrospinal fluid is always normal. In increased intracranial pressure the glucose content is raised, and probably as the result of irritation of the floor of the fourth ventricle rather than of meningeal hyperemia. In concussion Mestrezat, Bouttier and Logre describe a characteristic change in the cerebrospinal fluid, which comes on in the course of two or three days and disappears after some weeks or months. This change consists in an excess of cerebrospinal fluid, as shown by high pressure, and increased amount of sugar, associated with an excess of albumin and a smaller number of cells than normal. This characteristic change in the cerebrospinal fluid, found in 80 per cent. of the 30 cases examined, is regarded as due to foci of destruction of nervous tissue, with an evidence of meningeal inflammation of infection. Thus there is no leucocytosis or fibrin, and the glucose content is not diminished.—*British Medical Journal.*

THE STIGMATA OF ABRAMS IN HEREDITARY SYPHILIS.—Albert Abrams, *Medical Record*, 1918, Vol. XCIV, p. 103, has observed that if the subject faces the geographical west, feet on a grounded plate and the hands are elevated in proximity to a window, it will be noted after thirty seconds that a circumscribed pallor is demonstrable at the terminal phalanges of all the fingers, notably the little fingers, at definite points, at the palmar surface of the terminal phalanx and on the inner surface and extreme end in heredosyphilis. In acquired syphilis, the circumscribed pallor on the palmar surface is not demonstrable but is seen in the other area only (extreme end). It is evident that mere elevation of the hands is productive of some anemia, but the latter is universal and not circumscribed. The hands should be manipulated in relation to the light so as to bring the anemic areas into evidence if not readily seen.—*American Journal of Syphilis.*

NEURO-ETIOLOGY.

CAUSE AND PREVENTION OF GOITER.—Hunziker, *Corresp. f. Schw. Aerzte*, after his study of goiter prevalent in different parts of Switzerland, gives data which seems to carry out his theory that goiter is a functional overgrowth of the thyroid caused by the effort of the organism to make up a shortage in the iodin supply. Since iodin naturally is supplied in the food, goiter prevails in places where there is deficiency of

iodin in the vegetation. In places where goiter is prevalent, iodin-containing manure might supply the plants with the necessary iodin, and thus entirely destroy goiter. The principal goiter regions are found at a moderate altitude from 600 to 1,000 meters; above or below this, goiter is not so common. The cooking salt used in one comparatively exempt district contained an unusual amount of iodin. Goiters develop in certain years more than in others, which fact may be due to rains washing the salts out of the soil. A sandy soil yields up salts more readily. The plants do not grow as abundantly in a rainy season, and do not take up as much of the salts in the soil. At an altitude above 1,000 meters, vegetation grows so abundantly that it works deep into the soil and takes up the salts. It is noticed that in the comparatively exempt district, the rainfall occurs in the autumn, instead of in the spring as it does in other places. The conclusion is reached that goiter is an adaptation to a diet in which there is very little iodin. Lack of iodin in plants is what connects goiter with climate and geological formations. An easy way to remedy the lack of iodin would be to have salt made with a small amount of iodin added. He suggests that it would be well to investigate as to whether the heat of the baking would not cause the iodin in salt in bread to be volatized. A year of "fertilizing people on a large scale by adding iodin to the sale would help to solve the problem. There is a still simpler plan, and that would be to have the salt taken from the salt springs in the district of Waadt which is comparatively exempt, and sent to a place where goiter is very prevalent and exchange it for the salt made from the springs in the latter district, that have a deficiency of iodin. All the testimony and arguments given point to the fact that a greater amount of iodin should be supplied in districts where goiter is prevalent.—*Charlotte Medical Journal.*

NEURASTHENIA: THE DISORDERS AND DISABILITIES OF FEAR.—Mott, *Lancet*, January 26, 1918, is of the opinion that phenomena of neurasthenia are the result of continued emotivity and preoccupation, causing a persistent condition of neural excitation. This tendency to emotivity may be inborn or acquired. This emotional excitement often finds its source in dreams of a terrifying nature, especially, of course, in the case of soldiers; obsessional preoccupation is also an important factor. Thus neurasthenia occurs with considerable frequency in men who have never been out of England from the fear of conscription or having been conscripted. In such cases the inborn temperamental disposition plays a considerable role. A continued emotivity is also produced by the fear of being boarded out of service, or not being allowed to go to the Front. A mental conflict is thus produced in the mind between the self-conservative instinct and the moral obligation of duty and patriotism.—*Jour. of Mental Science.*

CAUSES OF CHOREA.—J. Comby, *Arch. de Med. des Enf.*, insists that a slight acute encephalitis is the anatomical substratum of this disease. Out of 39 cases, in 6 evidences of hereditary syphilis were forthcoming, 7 of the 39 gave positive Wassermann reactions, 4 gave feeble or doubtful reactions, and 27 gave negative reactions. Clinical results do not give any satisfactory proof that the disease is syphilitic. Twenty-four of the 39 reacted positively to von Pirquet's test, but this was only a coincidence as tuberculosis is found in over two-thirds of hospital post-mortems. Evidence of articular rheumatism was only present in 6 cases and endocarditis in 8. In one case in every three evidences of rheumatism are forthcoming, an exactly similar result to that obtained for syphilis. Rest, milk diet, and arsenic in gradually increasing doses are strongly advocated.—*The British Journal of Diseases of Children.*

NEURO-SURGERY.

CRUSHING VERTEBRAL FRACTURE.—C. B. Spalding, *American Journal of Surgery*, states that vertebral fracture almost invariably owes its origin to traumatic violence externally applied. Crushing injuries and falls are the most common etiologic factors, but any form of external violence which produces forcible spinal flexion may cause fracture and crushing of one or more of the vertebrae with more or less extensive spinal cord damage.

Fractures of the cervical and dorsal regions are said to occur more frequently than those involving the lumbar and sacral portions.

The symptoms of vertebral fracture are usually so indicative that there would seem little excuse for diagnostic error based upon the clinical signs alone; but at least two radiographic plates should always be made to confirm the clinical findings. Angular deformity is noted where displacement has occurred; gentle manipulation usually elicits crepitation; where the spinal cord is extensively damaged paralysis distal to the fracture site is a characteristic manifestation. In slight cord injury paralysis may be incomplete and cause confusion in the clinical diagnosis.

One of the most constant clinical signs is profound shock which may persist for hours or days in the event expectant treatment is employed. On account of absence of the spinal cord in the lower lumbar, sacral and coccygeal segments, fracture involving these situations is unlikely to be accompanied by paralysis, but other indicative physical signs are invariably present.

In severe cord injury complete motor and sensory paralysis immediately supervenes; both superficial and deep reflexes are inhibited; rectal and vesical sphincteric control is lost; in many instances lumbar puncture discloses blood-tinged spinal fluid.

Pain and tenderness at the fracture site are important diagnostic symptoms which must be remembered regardless of the anatomic situation involved. The extent of the swelling, contusion, ecchymosis, etc., will depend largely upon the character of the causative trauma.

The treatment of vertebral fracture represents one of the darkest chapters in the history of surgical achievement, the mortality being greater than that attending the management of any other type of osseous injury. This is explained by the fact that in the majority of instances more or less damage is inflicted upon the spinal cord tissues. It is obvious that where the cord is entirely severed no benefit is to be expected from any method of treatment and continuation of the paralysis and dissolution of the individual is only a question of time. In incomplete lacerations the prognosis from radical surgical intervention is less unfavorable. The prognosis of fracture of the spine, especially when it occurs in the upper spinal region, is very unfavorable; if the patient should recover from the shock attending such injuries, he is very likely to be paralyzed the rest of his days.

There has hitherto existed much disagreement concerning the merits and demerits of laminectomy in the treatment of vertebral fracture, and even at present surgical opinion is apparently hopelessly divided. It would seem reasonable that where complete transverse section of the cord has not occurred, benefit in a certain percentage of instances may be expected to accrue from the performance of laminectomy with repair of the cord damage if possible. Where the cord has been completely severed, the case is hopeless from the beginning and operation is useless.

Based upon his experience the author believes laminectomy is absolutely contraindicated:

(1) In patients in shock, or who have received demonstrable injuries in addition to the spinal fracture and the cord damage accompanying it:

(2) In patients with fracture of the cervical spine whose respiration is embarrassed by paralysis of the intercostal muscles:

(3) In patients whose paralysis accompanied or was noted immediately after the accident:

(4) Before the fourth day of convalescence, because in cases in which improvement occurs it cannot be expected to manifest itself before the fourth day:

(5) In all patients who are improving under conservative treatment, and laminectomy cannot be expected to better conditions if improvement once shown comes to a standstill:

(6) In patients whose vertebral fracture is unaccompanied by medullary symptoms:

(7) In all patients with uncomplicated vertebral fracture with accompanying cord injury until at least four days have passed—the minimum time for spontaneous improvement to manifest itself.

The author believes that laminectomy is indicated in the rare cases of gradual onset of medullary symptoms, and in patients who originally free from cord symptoms begin to develop manifestations referable thereto.

NEURO-THERAPY.

THE TREATMENT OF CASES OF SHELL-SHOCK IN AN ADVANCED NEUROLOGICAL CENTER.—W. Brown, *Lancet*, August 17, 1918, from observations based on the treatment of between two and three thousand cases of psychoneurosis, the majority of whom were treated within forty-eight hours of their breakdown, states that 70 per cent. were able to return to the line after about a fortnight's rest.

The essential factors in the treatment are: (1) Persuasion, whereby the patient is rationally convinced of the true nature of his symptoms; (2) the sthenic emotions of confidence, conviction, and expectation. The symptoms are of emotional origin, and result from the partial failure of repression whereby the emotion is converted into physical innervations. The period of incubation of the symptoms corresponds to the time during which the patient is endeavoring to repress the painful emotional memories. The therapeutic method employed in early cases is one of "abreaction" or "working off" of the painful emotion. The patient is put into a condition of light hypnosis, and the experiences at the time of the shock are again revived in the mind of the patient. This produces a strong emotional reaction, and the patient again "lives through" his terrifying experience. This method brings back the lost function, but not by direct suggestion as in ordinary hypnosis. The patient is told that he will remember all that has happened to him during his sleep and during the gradual waking, the suppressed memories are synthetized to his personality by talking to him of events in his daily life.—*Jour. of Mental Science.*

NEURO-PATHOLOGY.

HISTOGENESIS OF CEREBRAL HYPERTROPHIC PACHYMENINGITIS AND ITS RELATION TO SYPHILIS.—G. B. Hassin, *American Journal of Syphilis*, October, 1918, discusses the several theories regarding the histogenesis of cerebral hypertrophic pachymeningitis, all of which recognize pachymeningitis as a morbid process of the dura itself, originating within this membrane, and is looked upon as an inflammatory process.

The author's exhaustive studies of two cases coming to autopsy leads to the conclusion that in the hypertrophic type of pachymeningitis, or fibrous hyperplastic meningitis, the primary lesion is in the vessels, *that the sole cause of the lesion is syphilis, and that there is a simultaneous involvement of all the three membranes, including the brain tissue proper.*

PSYCHIATRY.

DEMENTIA PRECOX.—F. W. Langdon, *American Journal of Insanity*, concludes as follows:

The mere presentation of evidence of the nature of a disease is obviously of little practical value in itself. To be fruitful in results it should point the way to constructive lines of thought. What useful lesson may we learn from a study of these various biologic aspects of dementia precox.

Since "mind" in its complete expression, includes the end results of all reactions of the animal organism to its environment, it is obviously impossible to draw a sharp scientific line of demarkation between psychology and psychiatry. The phenomena of the two sciences may be said to represent merely differing results of "rustling of leaves" on the higher branches of the "tree of biology." Our distinctions, therefore, are often arbitrary, based on the expediency of social conduct. Hence they may vary in different races and in the same race at different stages of development. The same truth applies to individuals.

Any practical plan of therapy for dementia precox should recognize the biologic tripod of sub-evolution, neuro-toxemia, and faulty psycho-genesis as the probable basis of the disease. Our efforts, therefore, should be directed toward improving the "soil," removal of "weeds" and changing the "crop." The obvious indications are: (a) Removal of the patient from sources of "psychic-conbicts" and "difficult adjustments" at as early a stage as possible. This means, of course, in practically every case, removal from home and home influences. (b) Rest, physical and mental, in bed, during the acute stage, so that the physiological energies may be promoted. (c) Attention to anemia and other morbid blood states. If a leukocytosis could be induced it would probably be desirable in some cases. (d) Eliminative measures by hydrotherapy and otherwise are very important. (e) Nutritional and constructive agencies must be pushed to the limit.

As general health and well-being improve under this course, moderate exercise in the open air and suitable occupational and diversional therapy become useful.

The difficulties of productive psycho-analysis and psycho-therapy are obviously great, in the fully developed psychosis, but their possibilities in very early stages of the disease may be correspondingly great.

Under the above-outlined methods of management, some cases improve so as to be able to resume family and social life to some extent; others rank in statistics as "recovered," though it is probable that they would be more correctly labelled "recovery with defect." It is conceivable, however, that in exceptionally favorable subjects, in an early stage of the illness, under the modes of management just outlined, the neuro-toxic element of the disease may "run its course," leaving a minimum of deterioration; and that the dynamic impulses of a benevolent nature, latent for a time, now relieved of their handicap, may reassert their powers. Evolution may then go on to a fairly normal completion—for the individual. These are the cases that may be said to really recover. They are rare but encourage us to try and hope.—*Indianapolis Med. Jour.*

MENTAL DISTURBANCES AND SYPHILIS.—Lewis M. Gaines, *American Journal of Syphilis*, July, 1918, prefaces his subject by remarking that, whereas formerly in studying mental cases stress was put upon the psychological reactions, character of delusions, type of hallucinations, varieties of illusions and numerous other data: at present in dealing with mental disturbance, the most important task is the search for evidences of neurosyphilis; so that for practical purposes we may classify insanity into groups, one caused by syphilis and the other not caused by syphilis. The author discusses the former group only, the study of which is simplified by recognizing the proven fact that syphilis may be the causative factor in practically any variety of mental disturbance.

To determine the presence of syphilis, the author presents the following outline:

1. Clinical evidences of neurosyphilis:

Such evidences are practically limited to suggestive occurrences in the past or family history of the patient, eye symptoms, and anomalies of deep reflexes. Of these, the eye furnishes the most suggestive information. Pupils irregular in contour, of unequal size, or which react poorly or not at all to light or accommodation, proclaim aloud the possibility of syphilis. Ptosis and transitory deplopia are suspicious. It must be borne in mind that all clinical evidences may be lacking.

2. Laboratory examination:

The blood Wassermann should be made, the spinal fluid Wassermann, cell count of spinal fluid and globulin estimation of spinal fluid should be obtained. It must be remembered that a negative Wassermann in the blood by no means excludes syphilis. The spinal fluid may give the only clue.

In proof of the contention that a deciding factor in the classification of mental cases is the determination of the existence of syphilis, the author refers to case records of idiocy, imbecility, mania, melancholia, dementia praecox, paranoia, many cases of so-called neurasthenia and cases presenting a medley of mental symptoms, which have as their etiologic basis, syphilis.

The most satisfactory classification of neurosyphilis is based on anatomic pathology and leads to the recognition of three types—meningeal neurosyphilis, vascular neurosyphilis, parenchymatous neurosyphilis, and secondarily, the combinations and permutations of these three. Thus, paresis is placed in the vascular-parenchymatous group, since the lesions occur especially, though not exclusively, in the blood vessels and in the parenchyma of the brain.

The lesions are of two main varieties from a pathologic standpoint:

Inflammatory or exudative, and degenerative. A third "toxic" variety is possible. The exudative variety responds to treatment in a gratifying manner, the degenerative does not. These two varieties may and often do co-exist, in which cases improvement is variable.

Mental symptoms or neurologic symptoms depend upon the type of lesion (meningeal, vascular, parenchymatous or their combinations), the variety (exudative or degenerative) and the anatomic location in the brain or cord.

The author believes that no one can successfully differentiate paretic and non-paretic forms of neurosyphilis—no matter what the psychic and mental symptoms or laboratory findings may be. The question of whether paresis is curable or not resolves itself into the question of what is meant by the term "paresis." If it is defined as essentially an incurable disease of the brain, certainly it is incurable. If it is the type or form of neurosyphilis which is destined to terminate the patient's career, *willy nilly*, certainly it is incurable. Why give treatment? Make the patient comfortable and pray for the end. But what medical Nestor, what diagnostic prodigy, is going to make the differentiation between the form which is to be paresis and that which is not to be paresis? Why not, tacitly at least, disregard the old name paresis and recognize only cerebral syphilis? From such a disease some recover, some enjoy remissions, while others in the face of all treatment pursue a downward path.

The author deprecates the attitude of hopelessness in the treatment of paresis, and urges that all cases of cerebral syphilis be treated intensively and persistently in spite of failures and discouragements. It is worth while to institute vigorous and prolonged intensive treatment in these cases. Cases are constantly being reported which conform to the paretic type in all their symptoms and signs, and which recover for a longer or shorter period under such intensive treatment.

The hopeless attitude adopted by many asylum physicians is partly due to the fact that a large proportion of their cases arrive late, when degenerative changes of such magnitude have occurred as to preclude improvement. Even here, however, there

are cases in which the symptoms result from exudative rather than degenerative changes in the brain, and which intensive treatment might improve.

Intensive treatment does not include those half-hearted rare injections of salvarsan or its substitutes with, perhaps, mercury pills and potassium iodide. By intensive treatment is meant intravenous salvarsan or reliable salvarsan substitutes, once to twice a week over a long period. It should be given until there is improvement, or until 20, 30 or 40 doses have been administered. Some cases are also benefited by intraspinal therapy, and some by the associated use of mercury and potassium iodide.

The author presents the following conclusions:

1. Syphilis may cause practically any type of mental disturbance. The old idea that a case of paresis must possess delusions of grandeur can no longer be entertained. Clinical symptoms and laboratory findings are the best tests to be applied in almost all cases of mental disorder.

2. In mental cases with evidences of syphilitic infections, probably all of them become impaired as the result of syphilis. There may be contributing other causes, but syphilis is the efficient cause.

3. Having established syphilis as the cause of a given case of mental disturbance, a gross injustice is perpetrated upon the patient and his family by consigning him to paretic hopelessness. Rather, he should be thought of as a case of cerebral syphilis, who may be benefited by intensive treatment and such treatment should be persistently continued as long as there is any possibility of improvement. Some patients have apparently recovered after many months of such constant efforts in their behalf.

THE PSYCHIATRY OF DEMENTIA PRECOX.—H. Campbell Stevens, *Illinois Medical Journal*, in a brief and concise presentation of its general clinical aspects, including treatment, argues for the organic conception of dementia precox and holds that the symptoms of this disease are the results of organic pathological changes in the body. While many such changes can be demonstrated, the mechanism by which the disease is evolved is still undetermined. These pathological changes occur in many different organs, and while no single coherent view has been proposed which incorporates all the facts in a definite conception, the organic findings are of such a nature that it seems impossible to interpret them from the point of view of a purely mental trouble. The morphological changes in the nerve cells of the brain are of three sorts: 1. fading away of the nerve cells, called *Zell-Schwund;* 2. disappearance of the Nissl substance or tigroid bodies, called chromatolysis; 3. grouping of glia cells about the diseased nerve cell, called satellitosis. Chemical studies of the brains of dementia precox subjects have shown a constant and peculiar change in the organic sulphur compounds. A proliferation of glia cells has been found in 85 per cent. of the dementia precox brains examined by one investigator. The intraspinal pressure in the large percentage of patients is increased by from one-half to twice the normal amount. Assuming the normal pressure to be 90-100 mm. of water, the intra-spinal pressure of dementia precox patients is from 150-250 mm. of water. In every spinal fluid examined by the author there was an increased amount of a protein substance precipitated by a saturated solution of ammonium sulphate. Presumably this protein was not a globulin, since these fluids gave a negative gold chloride reaction. Chemically this protein is probably a proteose. The instillation of a few drops of adrenalin hydrochloride 1/1000 into the conjunctival sac causes within a few minutes, in a normal subject, a widening of the pupil. The cause of this mydriasis is a stimulation of the dilator fibers of the pupil. In dementia precox, in a large per cent. of the cases, instillation of adrenalin causes a narrowing of the pupil. This paradoxical reaction has considerable diagnostic value in distinguishing between certain cases of manic-depressive insanity and dementia precox. The ophthalmoscopic examination of the fundus frequently shows tortuous blood-vessels, obliteration of the physiological cup and other signs of increased intra-cranial pressure. There is

a third group of pathological changes which the author calls the intoxication group. A leucocytosis of from 8 to 12 thousand cells is present in nearly all cases of dementia precox. Some of the changes above mentioned might be interpreted as due to vasomotor changes and therefore under psychic control, but a leucocytosis could not be caused by a subconscious mental mechanism. Circulation changes are one of the most striking clinical features in the dementia precox picture. These manifest themselves in an abnormally low blood pressure and cyanosis of the hands, with a peculiar mottled effect of other parts of the skin. The various pathological changes are summarized as follows:

Morphological changes in the brain:

1. *Zell-Schwund.*
2. Chromatolysis.
3. Satellitosis.
4. Gliosis.
5. Organic Sulphur Compounds.

Clinical neurological changes:

1. Spinal fluid pressure increased.
2. Proteose in spinal fluid.
3. Pressure symptoms in optic disc.
4. Adrenalin miosis.

Intoxication symptoms:

1. Leucocytosis 8-12 thousand.
2. Low blood pressure.
3. Cyanosis.

This summary of the organic pathological changes mentions only well attested facts by well recognized scientific methods. It should be noted that if any validity is to be conceded to the Abderhalden reaction in psychiatry, the weight of this evidence is all in favor of the organic conception of dementia precox. It is impossible to conceive how sclerosis of the brain, leucocytosis, and increased intra-spinal pressure could be brought about by a purely mental state. Dementia precox, therefore, is an organic disease of the body which manifests itself in a modified mentality and behavior because of chronic pathological changes in the cortex of the brain. While it is still too early to attempt to explain the pathological mechanism by which these diverse changes are produced, it is suggested that the leucocytosis and low blood pressure point to a low grade inflammatory reaction. The stimulus to this reaction may be conceived to be a toxic substance, the seat of production of which is at present unknown. The changes in the central nervous system, apparently, are the result of a chronic intoxication. The nature of this hypothetical substance is as yet undetermined. It is natural to conceive of it as one of the split products of protein metabolism. Some of these decomposition products of the protein molecule are known to be highly toxic.

PSYCHO-PATHOLOGY.

OBSERVATIONS ON THE ROLANDIC AREA IN A SERIES OF CASES OF INSANITY.—John Turner, *Journal Mental Science*, records the results of an extensive study of the Rolandic area regarding:

(1) Its configuration.

(2) The micrometry of its cortex, in order to ascertain whether there was a deficiency or atrophy in the depth of any of the laminae in different forms of insanity.

(3) The form of Betz cell here described, to ascertain whether its prevalence is maintained in the areas controlling the muscles of the remaining part of the lower extremities, of the upper extremities, and of the face.

(4) The correlations of the differences in the internal structure of the Betz cells with symptoms.

A theory is advanced as to the significance of the change seen in the pathology of insanity.

The author's method was to make a drawing of the Rolandic area on which was marked the site of the portions selected for study. The tissue was fixed in absolute alcohol, passed through chloroform, embedded in paraffin, all in the course of three or four days. Sections, including the cortex of both lips of the area, stained in Unna's polychrome blue, were drawn on a slightly enlarged scale, on which were marked the position of the principal Betz cells as seen under a low power, and also the region in which a definite granule layer could be detected. Drawings of the different types or of prevailing types of the Betz cells were made in the majority of cases by the aid of a "Zeiss camera lucida," all to the same scale.

As a result of these observations, the author formulates the following conclusions:

1. Anomalies in the form of the Rolandic fissure, and in the arrangement or architecture of its cortex, occur more frequently among the insane, especially among the dementia precox class and imbeciles, than in normal individuals.

2. There appear to be distinctive characters in the two sexes.

3. As regards a micrometric study of this region, the figures also indicate sexual differences in the width of the laminae, in which case it would not be legitimate to mix together male and female cases in micrometric studies. They fail to afford any clue towards a solution of the problem of the pathology of insanity. It would appear from them that the width of the cortex and its individual layers in both pre- and post-central lobes is an innate feature, not markedly affected by the forms of insanity, nor the degree of dementia and wasting of the hemispheres, nor by advancing age.

4. A study of the Betz cells is of very real assistance in this matter. The undue proportion of the axonal type in the insane enables one to catch a glimpse of the anatomical basis, so far as the brain is concerned, in a large number of cases. This type of cell is one of defective structure, and probably of deficient durability; and, moreover, the evidence is in favor of its being an innate defect, due to arrested development.

At all events, whether it is so or not, makes but little difference to its practical significance, as the morbid influence of perverted metabolism, to which the change in the cell has been ascribed, is one which probably comes into action early in the life of the individual. The presence of this type in more or less numbers is a rough index of the stability of the brain; other things being equal, a brain with a high percentage will more readily break down than one with a low percentage.

According to this criterion the brain of the precocious dement is the most unstable of all, and relatively more unstable in females than in males, and I hold that this is in accordance with clinical experience.

The brain of a congenitally defective person, though on the average less unstable, may be more defective than that of a case of dementia precox.

This type of cell in a very large number of cases shows that it is much more prevalent among females than males in sane persons and all classes of the insane.

BOOK REVIEWS.

THE AUTONOMIC FUNCTIONS AND THE PERSONALITY.—By Dr. Edward J. Kempf, Clinical Psychiatrist, St. Elizabeth's Hospital, Washington, D. C. Price, $2.00. Nervous and Mental Disease Publishing Co., 3617 Tenth Street, N. W., Washington, D. C.

This book has been written to show how the autonomic apparatus dominates the organism, and that the affections have their origin in the peripheral functions of this apparatus. Therefore the affections are recognized as the dominating dynamic force of the personality and determine the nature of its normal and abnormal traits and behavior.

The author found character traits in definitely localized physiological processes through the application of the well-known experimental work on the emotions, notably that of Sherrington and Cannon, and the recent advances in the anatomical and physiological knowledge of the autonomic nervous system and its relations to the glands and the visceral and somatic musculature.

The author sees in the autonomic nervous system the primitive means for recording the inherent cravings—organic needs—of the individual and in the cerebro-spinal or projicient nervous system the means for so relating the organism to its environment as to secure a neutralization of these needs—a satisfaction of its cravings. From this point of view the familiar psychoanalytic problems of the conflict, repression and the unconscious, receive a new interpretation in anatomo-physiological terms. The energy of the repression is seen as bound up in visceral tonicities and postural tensions and a distinctly new viewpoint is opened up for a consideration of many obscure visceral and neuro-psychiatric problems. The academic distinction between mind and body is wisely dissolved and disorders of the personality which can be approached psychoanalytically are seen in a broad biological setting which is at once stimulating and helpful to both the internist and the psychiatrist.

This work presents a practical, comprehensive interpretation of the nature and growth of the personality useful to the biologist, educator, physician, psychiatrist, psychologist, criminologist, and sociologist. Those who are interested in the problems of normal and abnormal behavior, and the nature and development of the personality will find valuable data and stimulating suggestions in this monograph.

—D. S. B.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. Third series; volume the thirty-ninth. Edited by Walter G. Elmer, M. D.

This large substantially bound volume contains the papers read before the College from January, 1917, to December, 1917, inclusive, which cover the broad general field of medicine, and, naturally all are of a high order.

The following elaborate contributions are of especial interest to the neurologist:

The Diagnostic and Prognostic Significance of Spinal Fluid Findings. By John A. Fordyce, M. D.

Observations on Types of Response in Treatment of Syphilis of the Central Nervous System. By Homer F. Swift, M. D.

Syphilis of the Nervous System in Some of Its Clinical and Pathological Findings. By William G. Spiller, M. D.

It should be a source of satisfaction to the members to have the transactions in a compact form, which is convenient for reading and handy for future ready reference.

—D. S. B.

MENTAL DISEASES. A Handbook Dealing with Diagnosis and Classification. By Walter Vose Gulick, M. D., Assistant Superintendent. Western State Hospital, Fort Steilacoom, Washington. Illustrated. Price, $2.00, net. E. B. Mosby Company, Publishers, St. Louis.

In this compendium of diagnosis of mental diseases the author uses the classification adopted by the American Medico-Psychological Association, which is given in full in the first chapter.

In the second chapter the author defines a few of the common terms of diagnostic import in the psychoses. Insanity itself is first discussed including the difficulties connected with an accurate definition, which is probably impossible, since insanity is not an entity but a symptom or manifestation of a number of conditions affecting the brain, and at best is a generic term, hence cannot be adequately defined.

The third chapter is given to the examination; the subsequent chapters being devoted to the various classes of the psychoses, the last chapter treating of shell-shock.

The work is well illustrated with photographs typifying most of the psychoses, thus completing a handy remembrancer for the student and practitioner. D. S. B.

THE UNSOUND MIND AND THE LAW. Presentation of Forensic Psychiatry. By George W. Jacoby, M. D., Author of "Child Training as an Exact Science." Price, $3.00, net. Funk & Wagnalls Company, Publishers, New York and London.

Medical progress, no less than justice, demands greater efficiency in forensic medicine and in no branch is this true so much as psychiatry, in which the differentiation between mental health and disease, responsibility and irresponsibility, and the degree of the latter, is often most difficult and occasionally, perhaps, impossible. It, therefore, behooves the psychiatrist to be prepared to meet this present and growing responsibility and it is with the object of enlightening him in this difficult task that the present volume is prepared.

The work is primarily divided into four divisions. The first part of the book deals with the general relation that jurisprudence bears to the treatment and restraint of those suffering from mental disorders, the second treats of methods of diagnosis and discrimination between different types of mental disease, and the third and fourth parts cover hypnosis, sexual anomalies, and the manner in which opinions should be rendered.

It is apparently impossible to give an adequate idea of the scope of this work in the space ordinarily permissible in a review, so that we shall content ourselves with referring to a few of the more salient points.

The author wisely gives much space to the examination, both subjective and objective. In considering the stigmata of degeneration, he sounds a note of warning against attaching too much importance to them *per se*.

The author lays stress upon the importance of the endocrine glands and the infection-toxic processes in the causation of mental diseases and expresses confidence in Abderhalden's method of their differentiation, in support of which he gives extensive statistics.

The various psychoses and psycho-neuroses are succinctly treated and their differential diagnosis briefly given, thus supplying a ready reference for refreshing the memory which will appeal especially to those who are not in constant contact with all sorts and degrees of mental obliquity, and to those who feel that "discretion is the better part of valor" when confronted with a medico-legal case.

Due consideration is given to the forensic aspects of the various psychoses, psycho-neuroses, hypnosis, and sexual abnomalies.

In his remarks preliminary to practical examples of examinations and medico-legal reports, the author wisely admonishes the expert that in formulating his views before

a legal body, he express himself in other language than when talking to his scientific peers, since from a medical point of view the judge is a layman just as the physician must be considered a layman when he is confronted with a purely juristic problem.

However, this advice is difficult to reconcile with the use in the author's illustrative reports of such terms as "anamnesis," "psychic," "psycho-neurosis," "cortico-motor," "partuition," and "stigmata," which, if deemed necessary or wise to use, might appropriately be accompanied by the English synonym or translation.

However, the work will be found of practical value and a great aid to all who would qualify as psychiatric court experts.—D. S. B.

ON THE FRINGE OF THE GREAT FIGHT. By Colonel George G. Nasmith, C. M. G. Price, $1.50, net. George H. Doran Company, Publishers, New York.

As a literary production this volume would be classified as a book of travels, for it describes interesting incidents, scenes, conversation, etc., coming under the observation of the author from the day in August, 1914, when he decided to enter the Military Service at his home in Canada until he left France, in October, 1916, but it is more; since the author was connected with the Sanitary Department, it gives interesting and instructive information regarding laboratory work in the field and the safeguarding the health of the troops, as well as the civilian population in the territory occupied.

As his work carried him to the front, the author is enabled to describe the thrills of gas attacks and air raids, the harrowing scenes of battle, etc. He analyzed the German gas, invented the gas mask, and devised a means of supplying the troops with pure water.

Having been detained for some time about London and visited Paris, the author details entertainingly amusing war-time incidents and experiences in these cities, as well as other now well-known places abroad.

In brief, the book is kaleidoscopic in substance and so entertaining that one naturally observes that in consonence with the adage, "opportunity makes the thief," may be formulated the maxim, "opportunity develops the author."—D. S. B.

SEALE HAYNE NEUROLOGICAL STUDIES. Vol. I, No. 1, July, 1918. Edited by Arthur F. Hurst, M. A., M. D. Oxon., F. R. C. P., Major R. A. M. C., and Officer-in-charge, Seale Hayne Military Hospital, Newton Abbot, assisted by Capt. J. L. M. Symns, M. A., M. D. Cantab., Capt. W. R. Reynell, M. A., M. D. Oxon., M. R. C. P. and Lieut. S. H. Wilkinson, M. B. Edin. Issued every two months; price 3s. 6d. net per number; annual subscription for six numbers, 21s. post free. Oxford University Press. London, Edinburgh, Glasgow, New York, Toronto, Melbourne, Cape Town, Bombay.

This new periodical is founded for the purpose of publishing the results of investigations regarding the nature, diagnosis and treatment of "war neuroses" from studies of the vast material supplied by the Seale Hayne Military Hospital for the treatment of soldiers suffering from neuroses incident to the war, though why "war neuroses?"

The Seale Hayne Military Hospital was one of the first hospitals in England to be devoted entirely to the treatment of soldiers suffering from war neuroses, so that the opportunity of studying the various problems they present have been quite exceptional.

The necessity for such studies is apparent, and judging from this number, we have good reasons to anticipate practical results which will be as far-reaching as they are beneficent, therefore, we welcome this new periodical to the journalistic fold.—D. S. B.

The Alienist and Neurologist

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THE SIGNS OF MENTAL DISORDER.

TRANSLATED FROM

KRAEPELIN, PSYCHIATRIE,

Achte Auflage.

By

H. I. GOSLINE, M. D.,

Pathologist, New Jersey State Hospital, Trenton, New Jersey.

PART II.

B.—*Disorders of the Intellectual Function.*

THE raw material of experience furnished by the senses and clarified by the attention forms the substrate of all further mental work and so also of the whole wealth of ideas of the person. One can understand, therefore, that the disorders of perception brought out in the previous pages, in the form in which they are produced by the sense falsifications, by clouding of consciousness, and finally by the lack of ability to skilfully select the impressions, cannot remain without the most far-reaching influence on the moulding of the content of consciousness and on the psychic personality. The less complete and less truthful the reports from the outer world come to the perception, the more fragmentary and the less reliable will the outlook remain which develops in the consciousness of the person about his surroundings, about his own self, and about his relation to the environment. In addition to this it happens that to those disorders which influence the assembling of the material of experience there are associated almost without exception those which influence in a pathological way the future *development* of that material.

Disorders of the Memory.—The commonest ground material of all mental activity is the *memory.** Each impression that has once gotten into the consciousness, after it disappears, leaves behind a trace which gradually becomes weaker, but which makes its renewal easy by an accidental combination of ideas or by an effort of will, the recollection. This permanent trace which enrolls in the store of experience of the person

*Ribot, Das Gedächtnis und seine Störungen, 1882; Sollier, Les troubles de la mémoire, 1892.

the perception once made a long time before, and places it with the memory for disposal, is retained in general the more strongly and the longer; in other words, the clearer the original impression was grasped and the more general its relations were to the rest of the content of consciousness, the more it had aroused the *interest* of the person. In addition to this, however, the firmness with which earlier impressions stick is increased to a high degree by repetition. The greatest majority of our ideas and even a large part of the combinations of ideas with which we work daily, are so familiar to us that they rise in us without any effort of recollection, by themselves, as soon as any incitement to it is offered.

The consideration of the disorders of memory, therefore, has two quite different processes to separate which can be considered quite independently of one another. The first of these is the *ability to take notice*, so designated by Wernicke,* the impression and the fixation of definite material of experience, newly provided. The ability to take notice is greatest in general for those impressions which are grasped with the greatest clearness and, still better, which are followed up according to definite points of view with the aid of the selective attention. All conditions which are the same in weakening the strength and clearness of the impressions as well as their response in our soul life, will at the same time detract from the power to take notice. To these belong interferences with the comprehension on the one hand, diversion and indifference on the other. We observe these disorders, therefore, in all marked cases of clouding of consciousness, in lesser degrees, to be sure, in the simple distraction as the result of fatigue, in interference with nose breathing, in the smoker, more in manic excitement, and finally in well advanced dementia in the paralytic, in epileptic feeblemindedness, in idiocy, and in those end stages of dementia precox which go on with a dulling of the participation in the outer world. The highest grades of disorder of observation, however, are met in Korssakow's syndrome and in senile dementia, especially in presbyophrenia, even though in this condition the mental excitability and the ability to comprehend are still tolerably well retained. According to investigations on such patients, carried out up to this time, it appears, however, that in them the perceptions develop unusually slowly, so that in the case of stimuli which act only for a short time, a distinct depreciation of the ability to comprehend comes out. At the same time, the fading of the processes of consciousness is completed uncommonly quickly. Just this condition may be considered the chief reason for the slight power of renewal of experiences in the patients mentioned.

Also in the manic patients, as the increased distractability proves, the fading of the ideas seems to be completed rapidly. Although their power of observation may be comparatively little disturbed, yet this can depend on the fact that the perceptions develop with too great rapidity. Perhaps it is not unnecessary to point out that in normal life even our dream memories show very little tenacity. They possess no great vividness in and of themselves and they disappear extraordinarily quickly, as a rule. Especially words and talk from dreams we are ordinarily not in a position to really retain, though we have made the effort to impress them upon ourselves while half awake by many repetitions.

Since severe cloudings of consciousness as a rule seem to be fairly sharply circumscribed temporally, so also can the power of observation be diminished or lost for a definite period of time only. In this way do gaps in memory arise, from which we may conclude in most cases a loss of consciousness during the period of time in question. Indeed, strictly speaking the *loss of memory*, the amnesia, is almost the only point of departure which permits us to assume with some degree of certainty with regard to a past loss of consciousness. The daily experience of the forgetting of dreams about which we are again reminded at times only by a chance impression, shows us that a

*Kraepelin, Monatschr. f. Psychiatrie, VIII, 245, 1900; Ranschburg, ebenda IX, 241, 1901.

psychic life, that is consciousness, can take place without the traces of the impressions and the ideas clinging firmly enough in memory to make a renewal possible without difficulty. Quite similar, without doubt, are those disorders of consciousness of epilepsy, of many deliria, of heavy smokers, of hypnotism, to be judged, in which clinical observation may frequently enough discover unequivocal signs of psychic activity, although later not the slightest memory of them can be determined or called up. For this conception are of special weight those cases, at times observed, in which immediately upon cessation of the disorder a certain memory of the occurrence is still possible, later to quickly vanish, or in which it is called up again by hypnosis, as is possible especially in the memory gaps of the hysterical and at times in the epileptic.

Under certain conditions definite disease processes in which undoubtedly no disturbance of consciousness exists, can in a supplementary way extinguish the memory permanently or transitorily at times. Such a "retrograde amnesia,"* a retrogressive loss of memory, is observed after epileptic, hysteric, eclamptic, and paralytic seizures, after head injuries, attempts at hanging, and poisoning. The patients no longer can remember not only the accident in question but even the experiences of the hours, days and weeks before. At times the memory gradually comes back later at least partially, with or without the aid of suggestion; in other cases, it is lost forever. Sibelius was able to determine in the severe retrograde amnesia following carbon monoxide poisoning, that it was regularly linked with disorder of observation after short loss of consciousness, but after a longer time it arose without that. He assumes that in the longer period the disorder of the impression process which sets in at once, rights itself again and therefore only the loss of the memory pictures developed immediately before, remains. As the retrograde amnesia is observed so frequently and almost regularly after certain injuries, it speaks in favor of the idea that the firm insertion of new impressions into our memory-store requires a much longer time than we usually assume. We will remember that immediately after the reception of many new impressions, as after a concert, their sifting and repetition is seldom very easy as it is after an interval of quiet collection; also the annexation of associated memory falsifications to an experience, after a longer interval, to be considered later, points to the fact that this latter begins gradually at first to exert its effect.

From this point of view it would be explainable that a sudden severe brain injury makes impossible not only the comprehension and fixing of new impressions but also how the experiences of recent date which are not yet sufficiently well fixed, are influenced or disturbed. To be sure, such an explanation will miss fire for amnesia which reaches very far back. If Konrad claims a case in which the content of the entire previous life was forgotten after mental excitement, then quite a different sort of process must be at the root of this case. Evidently we are concerned in all such cases with psychogenic disorders. We know that by lively emotional shocks whole realms of the life of the soul can be split off from their connection with the processes of consciousness. The best known examples of this are the hysterical paralyses and disorders of sensation. They act very much as if the patient had "forgotten" that he has an arm, a right side or an eye, although it may be proved that movements can be induced, and sensations evaluated. According to the views propounded by Freud and his adherents, the "forgetting" of experiences with strong feeling tone by means of "repression" is an uncommonly frequent occurrence also in non-hysterical persons. Jung even attempts to bring proof to show that the reason for the compensation of an association in the repetition of the experience, is regularly given by another association or at least very often by the repressing action of a strongly toned "complex," the memory of a personal experience. I consider this view as far too inclusive but believe that we can grant strong emotional revolutions, under certain circumstances, not only a modifying but even a

*Paul, Arch. f. Psychiatrie, XXXII, 251, 1899.

repressing influence on memories, so far as they interfere with the comprehension and fixation of impressions. Chiefly the extensive retrograde amnesias appear to me to be amenable to such an explanation.

Essentially different from the power of observation for present impressions is the memory fixation of past experiences. It depends not only on the power of observation of earlier times but also on the frequency of previous repetitions, and finally on the tenacity of the memory in general. We usually judge the firmness of memory mostly by the certainty with which knowledge, earlier well learned, is still at the disposal of the individual, education of the school, important personal memories and the like. As experience teaches, depreciation of the power of memory, *weakness of memory*, is usually accompanied by a decrease in the power of observation, but not *vice versa*. The power of observation is influenced without memory weakness in the transitory cloudings of consciousness. Moreover, we observe a disproportion between severe disturbance of the power of observation and far less memory weakness especially in old age. The comprehension of new impressions takes place in these cases customarily without proper inner participation and the power of recall therefore remains a limited one for them, while the memory of former days, no longer repressed by fresh developments, so often returns into the circle of ideas with astonishing vividness and fidelity to details. With this experience there stands in fine agreement the fact that of all the combinations of ideas with which we are accustomed to work, about 70 per cent. arise from youth. In the disease disorders of old age the condition depicted often comes out rather strikingly, although with advancing dementia the earlier memories fail more and more at the same time. Similarly in paresis the power of observation can be disturbed much more severely at first, while later a rapidly increasing memory weakness also develops. In the mental disorder of Korssakow the memory weakness can extend back to a definite period of life, while the product of earlier times remains undisturbed.

Only brief mention should be made here of the fact that beside the temporally limited memory gaps, of course, the loss of *definite groups of ideas* is well known, a process whose best known examples are offered in word deafness and mental blindness. Wolff has described cases in which apparently certain classes of sense memory pictures have been lost while the general ideation remains intact. Very noteworthy examples of rather limited loss of ideas have been observed by Rieger in the investigation of a case of severe brain injury. The significance of such experiences is very difficult of interpretation. It appears worthy of consideration that even under ordinary circumstances the memory for different groups of ideas is very differently developed in different individuals. The memory of place, numbers and names, colors, tone, pitch, and forms, are apparently to a great extent independent of one another. Many experiences speak in favor of the idea, moreover, that the various constituents of the ideas, as they are provided by the single sense regions and forms of expression in speech, may persist with different firmness so that finally even a general disorder, according to the special composition of the ideas presented, may have peculiarly limited phenomena of loss as its result.

Very tormenting at times is a peculiar paling of the memory pictures which is understood by the patients as weakness of memory, although it may be shown that firmness and faithfulness of memory have nowhere suffered any loss. The patients complain of the fact that they are unable to "think," that they cannot recall the picture of any well-known experience of earlier life, of persons and places. The disorder is well marked in or after circular depressions, and may perhaps be connected with the inhibition of thought which exists in those cases. Even from psychopaths come the same complaints, beneath which may lie hidden anxious thought inhibitions. The feeling of "being foreign" stands in close association with this, the failure in external impressions of the "property of being recognized," which we often encounter in such

patients. The perceptions find no echo in their inner experience and hence gain no contact with their own soul life.

Of great scientific and practical value are those manifold and striking disorders which the *faithfulness of memory*, the agreement of content of the memory with the past experience, can show in the mentally ill. We know from experiment how in daily life even the simplest memory pictures never completely equal the perceptions even under ordinary conditions, but that even preservation in the memory and the arrangement in the rest of the content of consciousness usually produces very considerable alterations. Let one consider only how small the relations of size appear to the adult after long absence, which made such an impression on him as a child. In the change of the general measures of size the memory picture has also grown unnoticed so that their contradiction with reality is very striking. Moreover, the simple relation of one and the same experience by different persons or by the same person at different times* teaches that the memory is nothing else than a true reflection of reality. Of great importance is the circumstance, therefore, that the inner exactness of the duplicate is not at all dependent on the agreement with the original picture. Features invented out of whole cloth may be accompanied by the feelings of reliable memories, while real memory traces may perhaps appear uncertain. Indeed, it may be shown not infrequently that even those details which stand out in memory with especial clearness, do not represent the facts. This fact admonishes us to exercise care in the assumption of a "hyperamnesia," of a pathological increase in the power of memory. Although single experiences with very strong feeling tone may be very firmly impressed under certain circumstances, and may arise again with striking distinctness, yet we have to reckon with falsifications, as a rule, in the case of memories which go strikingly into details. Only in rather circumscribed provinces do really abnormally high memory processes occur, especially in the retention of names, numbers, periods of time, often in otherwise very limited mental equipment. Thus the great calculators** are able to retain four to seven times as many figures at once as other persons, now in visual ideas, now in auditory ideas.

By pathological alterations of the psychic personality the memories of the past are very frequently falsified afterward. To an especially high degree does this happen under emotional influences, especially under the stimulus of the self esteem. In persons with strong power of imagination and well marked ego feeling, the earlier experiences suffer very far-reaching changes unnoticed, in the sense that gradually the personality reaches more and more into the background. The shades vanish and the light of their own superiority shines brighter and brighter. Under proper circumstances, in the case of this involuntary struggle after self-glorification, we may even get to the invention. or, at least, the very free decoration of remarkable stories, which are at last considered true by the relater almost as much as the tales of Münschausen or fish stories. Daudet has very beautifully pictured this process in his well-known "Tartarin." Children, in whom the power of imagination is active and the self-criticism is still undeveloped, are very much inclined to the enlarging or alteration of experiences without being conscious of the falsification and so are unusually easily influenced by external factors; they are therefore entirely useless as witnesses before the law. As a usual thing the unreliability of their stories which is taken mostly to be mendacity, disappears with the institution of mental and moral maturity; in the outspoken pathological liars the statements permanently remain a mixture of truth and fancy even for the patients themselves, which they cannot unravel.

In other patients, also, we frequently meet falsifications of memory. To the depressed patient, his whole past life appears as a chain of sad experiences or bad actions; the delusions of persecution and of grandeur cast their shadows back to earlier

*Stern, Zur Psychologie der Aussage, 1902; Beiträge zur Psychologie der Aussage, Zeitschrift.
**Binet, Psychologie des grands calculateurs et jouers d'echecs. 1894.

times and make it apparent to the patients that even in their youth there were hints of a hostile condition in their surroundings, of striking attention from persons of high rank and of remarkable capabilities in the various realms of human endeavor.

As a rule we are concerned in these cases only with a "paramnesia," with *partial* mixture of real experiences with their own additions, and so with a process which would correspond in a certain sense to an illusion, somewhat. At times, however, it gets to be "hallucinations of memory" (Sully), too completely free invention of apparent reminiscences to which practically no counterpart exists in the past.* So we can remember occurrences in dreams with complete distinctness, occurrences which have never taken place; moreover, we are able to produce similar falsifications of memory in hypnosis by suggestion; here and there it is also possible in hysteric or epileptic dream states. Very strange falsifications of memory may be produced by patients with dementia phantastica. They tell about fabulous journeys which they have taken, wonderful experiences, fearful battles which they have survived, frightful wounds which they have suffered, and permit themselves to be misled by interruptions and suggestions into many isolated statements which contradict one another. Such experiences mostly took place years ago, or centuries ago, or even thousands of years ago. So in paretics the "confabulation," the relating of experiences which are freely invented, is ordinarily strongly developed, but especially in Korssakow's mental disorder and in presbyophrenia which so resembles it in many points. In these cases the gaps which are caused by the marked disorder of observation, are filled out of whole cloth or are incited purely from falsifications of memory which may accordingly reach to the earliest youth of the patient.

Apparently we are concerned in these cases as a rule with the necessity of making up any sort of picture from the past which has left no real traces behind. For the most part, therefore, daily occurrences are brought in which might very well have taken the part in the manner related. In other patients in connection with affects and delusions, the tendency has power to present strange experiences which are then decked out with all the details possible. At times even in deeply rooted memory gaps transparent "confabulations for the occasion" may be induced merely by strong suggestion; the patients make statements of general application in order to show no weak points and to half make light of their failure.

In many cases the memory falsifications are not produced freely, but they are associated with any chance external impressions (association form). The patients believe that they have previously seen certain persons or objects in their vicinity or that they have heard of them, without having retained any memory of them, however. They in no way deny those objects, therefore, as was the case in the falsifications of comprehension, in the influencing of perceptions by the memory, but in these cases the reverse process takes place: to the perception which is grasped very completely there is joined a radically invented memory whose supposed forerunner is dated back several months or more rarely years. In this instance the earlier experience usually arises after several hours or even days then to quickly reach full distinctness. At times the original is attributed to a dream so that reality appears as the fulfillment of the dream experience. Behr points out that in such falsifications may lie the explanation of many "true dreams." Not infrequently the disorder comes out several weeks or months after in enlarged form; Neisser believes that they may be attributed for this reason to excitation processes.

The last form of the falsification of memory which we have to consider here has been described best by Sander. Even in normal life, especially in youth and in the condition of a certain lassitude, we are at times struck that the idea suddenly presents itself, no matter where, that we have already had the same experience before in quite

*Kraepelin, Arch. f. Psychiatrie, XVII u. XVIII, Behr, Allg. Zeitschr. f. Psychiatrie, LVI, 918; Bernard-Leroy, L'illusion de fausse reconnaissance, 1898; Coriat, American Jour. Neur. and Psych., 1904, 577; Albes, De l'illusion de fausse reconnaissance, 1906.

the same way. At the same time we have a hazy presentiment of what will now probably take place, without being able to give any clear idea of it however. As a matter of fact any experience which comes up at the time appears to us to fulfill our presentiment, in reality. In this way we are, so to speak, for a short period of time, like inactive spectators before our own flow of ideas, which precedes the actual occurrence of things in indefinite suggestions until finally the whole phenomenon vanishes. Feelings of a painful uncertainty and tension are regularly associated with them.

In very marked form this disorder is observed here and there under pathological conditions, especially in epileptics in association with the attacks. What distinguishes them from the forms of memory falsifications mentioned earlier, is the *complete similarity of the total situation*, including the person himself, with a seeming memory (identifying form). While in some cases single impressions are comprehended as if recognized by means of some other condition or more frequently are comprehended immediately; in these cases the entire situation with all its details is taken to be merely the true representation of a completely similar experience from the person's own past. So it comes about that, in the fairly rare cases in which this falsification continues for weeks, months or even decades, the idea is produced in the patient with a certain degree of necessity that he is leading a double life which is repeating itself. Pick has described such a case in which a multiplication of memory took place. The reason for this disorder is completely unknown. It is possible that at times real hazy memories, especially in dreams, are brought into combination falsely on the basis of distant similarities with the present situation which is often grasped only in its general relations, and yet the frequency with which other falsifications arise quite freely offers little in favor of this explanation. The peculiar feelings of expectation may be referred most easily to the vague leaning toward a clear comprehension of the hazy content of consciousness.

Disorders of Orientation.—The continuous mental elaboration of the life experiences has the effect of making us able to take account continuously of the general situation at the moment in which we find ourselves, and of its development from past experiences. This clearness of connection with the present surroundings as well as with the past we designate as *orientation.** Naturally in this we are dealing with a highly developed mental process in the development of which the most various parts of our mental life are concerned. In the first place there develops the *temporal arrangement* of our experiences from the uninterrupted and many-sided connections which are constantly produced in our consciousness between all simultaneous processes and processes following directly upon one another, by the memory. In this way the totality of our memories is arranged into a continuous chain whose end point is the present moment while the first member reaches more or less remotely into the past. Only the earliest constituents of this series are at any time the content of our memory in greater completeness and clearness; the farther we go back the more do the details disappear and the more quickly does the series shrink to few especially significant facts of memory to which is linked a mixture of single reminiscences in a manner more or less loose. It is those landmarks which place themselves in definite relation to general experiences, especially to calculation of time, and so make possible for us at least an approximate temporal arrangement of our experiences in the past.

Also the clearness with respect to *place*, in which we are, is in part linked with the processes of the memory. On the one hand we are able with the help of memory pictures developed earlier to recognize the details of our present surroundings; on the other hand the previous experiences can give us insight into an otherwise obscure condition if, by their agency, the change in location is presented in an unequivocal way and is foreseen by us. Of course, very often we will have to attribute an essential role to the comprehension in the orientation for place. In all circumstances of life in which

*Finzi, Rivista di patologia nervose e mentale, IV, 8, 1899.

we do not know beforehand into what position we are coming or by what circumstances changes are made, in our expectation, the perception regularly clears up at once the actual position, while in some way or other it brings about the linking of the new impressions with the earlier experiences. Indeed, we are frequently not dealing with a simple clothing of the present surroundings with memory pictures in this, but the understanding of the surroundings is gained first, perhaps, by more or less circumstantial considerations and conclusions. Quite the same holds true for the orientation of person in which the memory, comprehension and judgment must work in harmony.

From this presentation we conclude that the orientation of our patients can be influenced by very different disorders. It is, therefore, advisable, perhaps, to distinguish quite generally three chief forms of disorientation, according to whether the cause lies essentially in the pathological changes of comprehension, of memory or of judgment. In the single case the co-operation of several of these causes may, of course, take place. Moreover, the limits of the disorder may reach either to all fields of the orientation or be confined to single connections so we may distinguish complete and partial disorientation.

The picture of the disorder is, accordingly, a very varied one, the more so as the influencing of the psychic processes, out of which the uncertainty of the patients arises, can be manifold. Thus, the comprehension of the surroundings can be interfered with so that the patients do not possess the adequate mental responsiveness to elaborate the external impressions, by an inhibition of thought, by clouding of consciousness with or without falsification of the perception. The first case is very frequent in dementia precox. In this *apathetic* disorientation, although they perceive without difficulty, the patients lack the inclination to get control of the meaning of what they see and hear, so that weeks afterward they are still unconcerned about where they are, who the persons of their surroundings are, or how much time has passed. Only apparently similar is the inhibition of thought as we meet it in manic-depressive psychosis. Here the coherent comprehension of the surroundings is interfered with by the increased difficulty in thinking so that the condition of *restlessness* ensues. The patients perceive details well, but are unable to compose from them any picture of their position. Similar, perhaps, is to be considered the disorientation in violent manic excitement, which takes place regularly, of course, with severe impairment of the comprehension and of the elaboration of external impressions. Also the various forms of the clouding of consciousness as they are observed in tumor, in epilepsy, in smokers, condition more or less marked modifications of the orientation. In the delirious states which we see as independent disease pictures chiefly in infections and intoxications as well as in epilepsy and hysteria, in addition to the lack of clearness of the comprehension, there are real false perceptions in addition to cloud and to falsify the picture of the surroundings. If one wishes, one may distinguish all these forms of disorientation as *stuporous*, *delirious*, *hallucinatory*, although he will always have to consider that in the individual case of the disease the origin of the disorder is surely never altogether unitary but is always conditioned by the co-operation of different causes.

A good example of this is the disorientation in delirium tremens. In this condition there exist sense falsifications and a disorder of comprehension. However, the lack of comparison between the presence of mind of these patients and their complete uncertainty concerning their entire position, is very striking. In part the circumstance may very well play a role here that the comprehension of the spoken word is far less disturbed than that of the visual impressions, which are of special weight even in the orientation. Moreover the patients do not become clear even though they are thoroughly put right about their position, though they understand the explanations very well. The inner delirious experiences quickly suppress again the effect of the words of explanation. So it happens that the content of these latter, as well as the real perception, does not stick but is simply forgotten very soon. By this last sign, especially, the characteristic

uncertainty concerning the experiences and the temporal relationships of the immediate past, is produced.

In those cases in which Korssakow's syndrome concludes the delirium tremens the *amnestic* disorientation, as we may call it, comes more and more into the foreground, since the disorder of the comprehension, the sense falsifications, the deliria, may become less marked or disappear entirely. Correspondingly the patients become clear for the most part about their surroundings and their position, but are unable to place themselves right with respect to time. They do not know when they get into the hospital, when they had visitors last or when they ate dinner, for the impressions cling too lightly to them to make possible the combination into that firmly connected series which presents the retrospective glance a valuation of the temporal distance from the present. Just as after monotonous, inactive weeks we recall to mind the last significant experience as if it had taken place "only yesterday," so the months which have left no lasting trace in their memory, appear to these patients like a few days. Or the pictures of the immediate past fade so rapidly that they appear to them to lie in the distant background and the patients think that they have already been months in the location in which they have only just arrived. The usual mass of the day's changes which guards us from mistakes of valuation, leaves no traces in these cases which could make possible a temporal estimation of distance. On the other hand, such valuation is made especially difficult by the emergence of falsifications of memory.

Still more strongly expressed can the amnestic disorientation be in those forms of senile dementia which we designate with Wernicke as presbyophrenia. The especially severe disturbance of observation in these cases, together with a difficulty in the comprehension, ordinarily makes impossible the mental elaboration of the impressions of the moment so that the patients are unable to get any clear picture of their surroundings, although they understand the details without marked difficulty. Also the well-known disorientation for time of the paretic is essentially of amnestic origin. In them we see at the same time the loss of power to make time estimates chiefly and to recognize contradictions in them as well as to distinguish the uncertainty of the temporal arrangement of their early experiences. Beside the weakness of memory and the disorder of observation for the most part not very well marked, in these cases the loss of mental responsiveness also plays a role.

As a special form of amnestic disorientation we may finally consider that uncertainty about time and surroundings which is produced by a gap in memory. In awaking from a sleep or from a faint we experience the lively need of being clear about our total position and so of getting the connection with the earlier experiences again. If, in the interval, important changes have taken place, then the solution of these tasks, ordinarily so simple, may become quite difficult, especially if at first perhaps certain interferences with the comprehension or the thinking still persist. From these causes we very ordinarily see after long continued states of severe clouding of consciousness and the memory gaps conditioned thereby, a deficient orientation persist for some time. Under certain conditions, also, the after effect of falsifications and deliria from the disorder which is present, can play a part.

Quite a different significance than that of the previous forms is to be given finally to the *delusional* disorientation. Here it is only the mental elaboration of the impressions, in themselves correctly comprehended and expressed, which does not lead to a lack of clearness but to a false view of time and circumstance. A conscious deliberation does not need to take place in these cases; we are concerned only with the fact that the patients place themselves in direct opposition to the apparent and to the declarations of their surroundings. Under certain conditions, however, illusional or hallucinatory perceptions may give the special impulse to the delusional meaning. Here especially belong many mistakes in identifying persons, the claims of depressed patients that they

are in prison, in hell, in a bad house, the obstinate displacing of the numbers of the days or of the years in paranoid patients and so on.

Disorders in the Production of Ideas and Concepts.—The simplest ideas contain only elements from a single sense region. With the advance of the mental development, however, constantly more complex formations arise whose single constituents take root in the most widely scattered regions of the sense experience. In this, most always the share which the single senses take is, indeed, a varied one to a high degree. Not only does greater significance attach to certain groups of perceptions for the formation of ideas than to others, but according to the personal gifts, now more these, now more those, fields of the sense experience are preferred in this process. While in the life of ideas of one person those constituents predominate which are taken up by the eye; in another person, the impressions provided by the hearing or by the movement sensations come chiefly into the foreground. In the complete failure of whole sense regions the ideas will be obliged to show a peculiar onesidedness, indeed, the case can exist in which the totality of ideas must arise exclusively from the perceptions of the touch and movement senses. In this limiting case, also, a high development of the ideational life is still possible.

It is clear that incomplete formation and slight retention of the sensory impressions must influence to a high degree the development of the total configuration of our ideational activity. The single constituents of perception come into no close union with one another and to the earlier experiences; isolated and without relation to any tendency, they are quickly and completely lost in the undifferentiated mass. Similar conditions have to be assumed in fact in the most severe forms of inborn and of developed dementia. In these cases, very often, a closer union of the single perceptions does not take place. The members of the chain of experience do not come into close connection with one another, but every impression falls quickly as it had arisen, unused into oblivion.

With the richer and more complex formation of the ideas the structure of these ideas necessarily becomes more complex. The number and the variability of the constituents joined together increases so that finally the whole circle of such a psychic picture may no longer be measured completely without further ado but only by complete consideration of the various sides. At the same time the constituents themselves also lose their sensory definiteness more and more since they have not arisen from a single sense impression but from perceptions often repeated. The chance things and the things of secondary importance of the single experience, are erased while the essential, frequently recurring, becomes more strongly marked and more deeply impressed. In this way even the original memory pictures become real ideas; they are no longer the simple echo of a definite sense experience but the common expression of total experiences of a certain sort which have worked chiefly upon the consciousness.

It is this point of the development upon which the *speech relationships* begin to unfold their influence upon the mental life. The extent and the multiplicity of the ideas of things makes it impossible to call into consciousness in the flow of thought all the implications of a chain of experiences in all directions. At first much more often in thinking do only the constituents of such a psychic structure which are most strongly developed come out to the surface, if other sides of the ideas are not pressed more to the foreground by special inclination. On frequent repetition of this process those parts which are more strongly developed finally become permanent in abbreviated method of thinking into real representatives of the total idea.

This representation can of itself, of course, fall to any optional constituent of the same. Also in this there exist without doubt very far-reaching personal differences. At first, naturally, single memory pictures of things now from this sense region, now from that, will assume this role, a condition which remains fixed all the longer and all the more marked the better the power of sensory imagination is developed. In general, however, in the place of the memories of things their speech symbols assume greater

and greater importance. The more comprehensive the single idea becomes, the more general its content, just by so much more does its sensory coloring fade, and the greater becomes the importance which the speech symbol, repeated in similar form constantly, gains in it. The most highly developed forms of the activity of comprehension, therefore, get their completion in large part quite outside the cumbersome ideas of things and usually touch only fleetingly here and there upon the realm of the sensory memories. It appears that just by the voluntary thinking the optional induction of ideas from our store of experience is made essentially easy, perhaps is first made possible. The arising of purely sensory memory pictures is, in general, independent of our will, as the example of the hypnagogic hallucinations shows, just like the real external impressions. On the other hand we are able to call up voluntarily at any time the speech movement ideas linked with them. It would be thinkable that the strange advance which the speech signifies for the mental development should be sought to an essential degree also in the association of the memory pictures to internal will activities.

Under pathological conditions the line of development here pointed out may come to a halt at any stage. In incomplete mental endowment the development of the ideas stops at the stage of the sensory memory pictures. The patients cling to the single experiences without being able to shell out the general from different similar impressions. They gain no short, concise expression for larger series of experiences; the non-essential does not separate itself from the essential for them, nor the general from the special. The total thinking, therefore, may not be competent to elevate itself beyond the realm of the immediately sensory data to the grasping of higher and more far-sighted viewpoints. From this there necessarily follows the limitation of the total life experiences to the closest and narrowest circle, the inability to develop general conceptions, which must serve as the ground-work of an abstract mental work.

Because of the great significance which the knowledge at hand possesses for the collection of new experiences, the faulty development of general ideas must influence in a very unfavorable way the growth of the fund of ideas. Earlier experiences sharpen our sight for other impressions of a similar sort; the new is taken up more easily and retained as soon as it can be associated with the known and can be arranged in the existing circle of ideas. The richer the store of ideas, the more capable is it for each enrichment, for the contacts of the life of the soul with the outer world are constantly becoming more numerous and multisided. Thus it happens that the incomplete development of the ideas themselves degrades the receptivity for new impressions at the same time. They find no connection in the fund of experience, do not become firmly fixed, and therefore soon get lost and easily get lost. With the sensory narrowness of the flow of thought there is regularly associated narrowness of the circle of vision, poverty of ideas and obtuseness of the memory.

Naturally all these disorders come out in exaggerated form only in those cases in which the pathological substrate exists from youth. In acquired feeblemindedness, the store of earlier experiences will be capable of more or less completely covering up the loss of the power for the reception of new impressions, for a long time, as well as that for the formation of new ideas. During the later development of the disease, of course, one can see those disorders gradually becoming more evident. In paresis, in dementia precox, in the feeblemindedness of old age we observe in a like manner how the circle of ideas gets narrow as the general, conceptual modes of thought give way to the tangible, commonplace and simple. New impressions are no longer taken up and developed and the earliest experiences are soon lost, even though the recollections from past days still cling with striking firmness and fidelity.

Scarcely less pernicious for the soul life than the faulty development of the associations of ideas, is usually the pathological instability of the psychic pictures which are capable of forming the connecting bridges between experiences of the most varied sort with striking ease. Here remote similarities and partial agreements are sufficient

to place two ideas into close relationship; the lack of connecting members is rapidly filled out by broad surmises and the disagreements are blurred over in more or less free transformation. So a patient who was an inventor once suggested the idea to me by means of numerous and thorough diagrams, of representing whole pieces of music in translated form by the varied arrangement of certain adorning characters and in this way to stimulate the eye and the ear artistically at the same time. Such a willfulness of the combination of ideas in the formation of concepts, naturally makes a selection of things that go together and the exclusion of the unessential, the remote, almost completely impossible. In this way the concepts must lack in all particulars that sharpness and clearness which makes them of any value as a ground-work for higher mental processes; they become *blurred* and *indistinct* psychic images, with whose help only onesided and twisted judgments of doubtful value can come to fruition as well as indefinite and uncertain conclusions by analogy, just as soon as the mode of thinking gets out of the realm of the immediate sense experience. As clinical expression of the disorder here presented, we may consider the tendncy to "gushing" and dreaming, the lack of the sense for facts and details, the frittering away of the power for mental work in impracticable plans and pipe dreams. These characteristics form the pathognomonic signs of certain psychopathic personalities; we meet them also in the insane and in the paranoid conditions.

Disorders of the Association of Ideas.—The combination of ready ideas among one another is brought about by definite laws which are known to us at least in their general features. We can at once distinguish two great groups of combinations of ideas, the external and the internal. In the first the association of the two ideas is brought about only by a purely external, chance relationship, while we have to do in the inner associations with material connections which have themselves grown out of the content of the ideas.

In single instances the two chief groups appear still farther in subgroups according to the nature of the connecting link.* An external connection can be produced at once by frequent association of the same impressions. This happens, for example, in the case where two perceptions occur often or regularly together in close spatial or temporal relationship. House and window, thunder and lightning, correspond to these conditions. A very similar but still more superficial relation can be formed by the customs of speech. Definite word and sentence combinations get fixed in us by their frequent repetition, so that any component of the same calls the rest into consciousness regularly also. To these belong the sayings, the fixed expressions, and the citations. Often the thought of earlier races has crystallized itself in these combinations. To the speech connection, there corresponds at the same time a material connection. For us, however, this internal connection has long since disappeared in the background beside the simple, thoughtless customs of speech. To a still higher degree is that the case when the single fragment, as not infrequently is the case, is quite senseless and is brought to a sensible whole by the mechanical induction of the missing part.

This last form of the association of ideas externally immediately forms the transition to the *clang associations* which are of special weight to psychiatry. In these we are concerned with the linking of two ideas solely on the ground of their similarity in sound, when spoken. Correspondence of single letters, not infrequently in the form of rhymes, suffices in these cases to form the connecting bridges, quite without any reference to the content. In these cases, also, the peculiarity of the process is clearest in those examples in which the associated similarity of sound no longer possesses any speech

*Aschaffenburg, Experimentelle Studien über Assoziationen, Psychologische Arbeiten, I, 2; II, 1; IV, 2; v. d. Plaats, Vrije Woordassociatie, Diss., 1898; Claparéde, l'associationen des idées, 1903; Van Erp Taalman Kip, Psychiatrische en neurologische Bladen, 1903, 1; 1906, 81; 1908, 93, 293; Bouman, Onderzoekingen over Vrije Woordassociatie, Verhandl. der Akademie der Wissensch. in Amsterdam, XII, 1, 1905.

content but is entirely senseless. Which constituent of the form of speech expression, the word clang image or the speech movement idea, brings about the union in the clang association cannot be decided at once. It is worthy of note, however, that the clang associations as a rule occur in those cases in which there is a certain pressure to speech, thus in manic excitement, then under the influence of alcohol and after quick walking. This experience may speak more for the division of the speech movement ideas. In a similar direction would point the fact that under the influence of alcohol the rhyme sentences in association experiments appear shortened in spite of more difficult comprehension.

In the two great groups of the association of ideas we see at once the relation according to superordination, co-ordination, and subordination. The mode of development of the ideas takes place in such a manner that we pass from sensory single experiences gradually by the embellishment of similar impressions to an ascending series of ideas which are constantly more general. All the individual members of this development naturally stand in closer or more distant relation with one another, so that our flow of thought at any time can repeat the progress from the special to the general with which it began its development in the first place. The same road is passable in the opposite direction, however, and we are finally able to permanently renew the process which made possible for us from the beginning the connection with one another of experiences which have inner agreement. All these combinations form together the psychological groundwork of those ("analytical") judgments which bring to expression the manifold relation of our ideas to one another from the sensorily simplest to the most complicated and most general forms.

On the other hand, we can consider another form of the inner associations as the forerunner of that ("synthetic") judgment in which we are concerned with the enrichment of our ideas by new constituents. We designate these associations of ideas best, perhaps, as predicative. They add to any given idea some sort of a sign which does not belong necessarily to the conceptual determination but which arises, a more or less narrowly limited group of single experiences, from the total number of the constituents of the idea. This limited expression can be gathered from the present impressions just as well as from the memory. The predicative associations, accordingly, contain mostly properties, states, activities, by which the preceding idea is more definitely determined in any direction. There are certain constituents of these more clearly illuminated, whether developed later or at once, which would not of themselves come into consciousness in the arising of that idea. Thus the idea, dog, arises in us together with the speech designation by the general outlines of the animal; perhaps we will become vaguely conscious at the same time that the dog is an animal, that he is colored black, that he runs. All these hazy constituents of the main idea can be brought into clear expression by the further course of the mental process. Only the first named, however, is a *necessary* member of the idea, dog; the last two, and numerous others of a similar sort, contain a closer definition which does not occur in all dogs without exception. Therefore, if the idea, animal, follows the idea, dog, we are dealing with an association by superordination while the two other associations contain predicative determinations.

The grouping of the combinations of ideas in different persons as it is discovered by the association experiment, the linking of the first idea that arises when a word is presented, can prove to be very manifold. Bouman differentiates various types according to whether in the associations, the co-ordinations, the predicative, the word completions, the clang associations, or the speech memories, predominate; Jung and Ricklin, also, characterize a predicative type which is distinguished at once by slight suggestibility. An ordinarily exaggerated increase of the clang associations arises in the associations in a foreign language; in other cases it almost always points to an education in youth in several languages. Beside these more or less well differentiated personal peculiarities of association, the single experiment can also be essentially influenced by all sorts of

chance occurrences, especially by addition phenomena. Any form of association whatever, which arises at once, for example, a rhyme, a property or activity, a translation, can ordinarily draw after it a large number of similar combinations. Finally, the general condition of the experimental person is also of significance. Fatigue after staying awake all night, bodily excitement, the use of alcohol, increase, as already pointed out, the tendency to speech and clang associations. According to Jung's teachings, strongly affective ideational complexes which are excited by the stimulus word should bring about a lengthening of the association time, which can reach even into the ensuing experiments, and can cause the occurrence of senseless associations, repetition of the stimulus word, misunderstanding of the stimulus word, talking beside the point, translation into a foreign language and still other deviations. I consider these propositions, in whose foundation too much play is given to the voluntary interpretation, as too far reaching, and in addition the more recent tests of Schnitzler have not been able to confirm them.

The associations of our patients, in so far as we are not concerned with differences in the formation, deviate in general remarkably little from those of the healthy. This is explained especially by the predominating role which the speech maintains for the fate of the experiment. What is expressed in it is chiefly the crystallization of the habits of speech, which are little influenced for the most part by the disease, comparatively speaking. Of course, it can be shown naturally that, in the demented patients, a greater poverty of ideas and uniformity in the results of experiments occurs, so that frequently senseless answers, repetition of the stimulus word, misunderstandings, and denials occur; also adherence to the same answer is seen. Apparently the only disorder in which the associations show a characteristic change is the manic excitement. In these cases for the most part the tendency to clang associations comes out very distinctly, especially rhymes, citations, and word completions, which may finally surpass all other forms. Evidently certain relations with the pressure to talk exist which moves the speech elements of the ideas into the foreground.

Disorders of the Flow of Thought.—The linking of our ideas ordinarily takes place according to the laws of association pointed out above only when we permit our thoughts to ramble on without plan. In systematic thought, however, we pursue a definite flow of thought, that is to say, the course of our work of understanding is dominated by any general idea whatever, which determines at the time the direction of the following associations. This leading idea or "dominant idea" can, as Liepmann has claimed, be the total image of an actual living experience, of a process or a derived, comprehensive idea. Under their persistent influence, those constituents of the emerging ideas are always especially strongly excited which stand in closer harmony with it. From the great number of possible associations only those really come into existence, in this manner, which lie in a definite direction determined by the general goal of the path of thought. In addition to the most comprehensive idea which remains permanently of value, there are present many subordinate leading ideas which lose one another in the single stages of the moving path of the idea but which come together in that first comprehensive idea. Thus arises the inner unity and compactness of our thinking, the mental freedom which places us in a position to determine the course of our ideas according to points of view which have arisen from the history of the development of our total psychic personality. Moreover, we attain the complete unity of our path of thought only by will strivings directed especially to it, which makes it possible for us to hold fast the leading idea without confusion and thus do logical mental work. Ordinarily, also, the leading ideas may frequently change in comparatively short periods of time.

In disease conditions the uniform progress of the path of thought, as it is guaranteed by the powerful influence of the leading ideas, may be disordered in various ways. We will consider first those processes which condition an interference with its development. Of course, in the criticism of the flow of ideas, we are unfortunately dependent

upon the speech manifestations of the patients, which doubtless furnish us with a very incomplete picture of the real conditions and one often distorted. The simplest of these disorders is the *arrest of the ideas*:* In the first place we are concerned in this condition with the incomplete return of similar speech expressions and modifications. In the state of fatigue we not infrequently meet with the same words constantly coming to our tongue, to our vexation, or the same expressions to our pen; ordinarily there is frequently connected with this a talking beside the point in the sense of the preceding modifications. In pathological development we meet this disorder in brain diseases. especially in arteriosclerosis. The patients repeatedly produce the expressions once used; they falsely label objects with a name which they have just heard or used themselves or they mix correct and incomplete parts of speech with one another. Especially under the influence of fatigue, the disorder can rapidly become so marked that one can no longer obtain a correct answer, but only various or monotonous repetition of the answers given previously.

Also non-speech ideas can persist, of course, chiefly or exclusively motor in nature. The patients use objects given them in a wrong way, in the way they have just previously used other objects correctly. Neisser has characterized this disorder strikingly with the name *perseveration*. In a few cases of senile dementia with marked arrest, Schneider was able to show that the development of the ideas excited was extraordinarily delayed. The naming of a picture was often carried out, correctly, however, only when one or two other pictures had been shown in the meantime, so that a regular, marked delay was to be assumed. In fact, one frequently gets the impression in perseveration as if the patients met the new perception at first completely without understanding and therefore upon pressure they simply repeat the past. Heilbronner found in post-epileptic dream states that the arrest was stronger in the solution of the more difficult tasks; he is, therefore, of the opinion that the loss of power to respond to a given demand forces the will impulse again into the paths previously travelled. And Vogt points to the fact that in itself every act of will shows the tendency to repeat itself, as is influenced by the facilitating action of the stimulus. The perseveration would be conditioned, therefore, not by the special stubbornness of the arresting idea but by the fact that the absence of newly arising ideas allows a gap to ensue which is filled out involuntarily by repetition of the process which has just taken precedence. In paraphasia, which is quite usually accompanied by arrest, the gap takes place as a result of the difficulty in finding words.

Carefully to be distinguished from perseveration is the tendency to "hunt to death" the same idea as it occurs to us in its most exaggerated form in dementia precox. In this case it is merely an outgrowth of the general *stereotypy of the will processes*. Evidences of this phenomenon appear even in children at times. It consists in the impulsive repetition of the same speech phenomena, often repeated endlessly, now for itself alone, now with interweaving into other more or less disconnected trains of thought. The content of these stereotpyed ideas is therefore a rather chance one and is not determined by what has gone previously, as in arrest. Rather can an idea be set free by another over a short or a long time, then to stick the more tenaciously or there intervene in a long chain of thought a series of different ideas which constantly recur. Evidently in the process, accordingly, there is involved not the special property of the single idea as the leading player but the total state of the mental life. Since we must assume, indeed, that the stereotypy takes place only by lack of a conscious goal for the directing of the will, we should not be surprised that the compulsive repetition of the same ideas is regularly associated with an incoherency of the thought process which may be attributed to insufficient development of leading ideas. This appears very distinctly in the following example:

*Sölder, Jarhb. f. Psychiatrie, XVIII, 479, 1899; Heilbronner, Monatsch. f. Psychiatrie, XVIII, Ergänzungsheft, 293.

"Herr Vetterlieb, it was not so, Herr Vetterlieb, it was not so, it was not so, A Lauer for S Lauer, A Lauer for S Lauer, only the single, A Lauer for S Lauer, Herr Vetterlieb, because I have prayed for your only child, as I in Tauberbischoffsheim. Herr Vetterlieb, good Herr Vetterlieb, my only Vetterlieb, I will say how it has lived, a good, a bad, Herr Vetterlieb, M, R, I, S. Herr Vetterlieb, whiskey against brandy, poison against poison. I hang my tongue now so, now so, out behind, now out in front. Herr Vetterlieb (repeated five times), that was force, Herr Vetterlieb, a brazen serpent, perforated, Herr Vetterlieb, because of the true, because of the true, because of the true will," and so on.

Again, another meaning than the frequent return of the same ideas in a definite flow of thought is the possession of the *common renewal* of similar series of ideas in the most varied circumstances. While in the previous case the content of the stereotyped ideas can vary from case to case, we are dealing in this case with the fixed crystallization of previous experiences and, therefore, with the well-nigh unchangeable.

Our entire mental development depends on the circumstances that our associations of ideas gradually fix themselves more and more firmly by frequent repetition. The experience of mental work carried on previously stands at our disposal in this way finally almost without difficulty at any time, so that we can continue our progress without further ado upon a foundation once set up. Indeed, even the total wealth of experience and of thought of past ages is provided us in the stable form of the mother tongue as the finished tool for any sort of thinking. The significance of these given formulae in the flow of the ideas is naturally a very different one according to the personal abilities for independent creation; it can scarcely be overrated, however. We all know that we constantly work with a great number of constant modifications and firm combinations of ideas which emerge and disappear with astonishing inevitableness at the given signal word, without our activity, indeed even against our will. I was able to show that of a large group of habitual associations, about 70 per cent. returned in completely similar form after almost two years.

In disease conditions this relation is doubtless transgressed, often enough very significantly. Especially when the capability to collect and to elaborate new impressions is made void by insanity, the remains of the ideas from days of health are accustomed gradually to become fixed in constant repetition. So we see in old age, in paresis, and in various other forms of dementia that the course of the ideas shrinks more and more to single, constantly recurring chains of thought which contain no more new mental processes involving effort. There develops in this way a more or less high degree of *uniformity* of the conscious processes. Self-evident there is constantly associated a considerable depreciation of the fund of ideas. That which does not remain in firmly fixed, unchangeable combination, becomes irretrievably lost. Finally the total speech demonstration of a personality richly developed earlier can become retracted to the conjugation of a few scanty thoughts.

The following report of a senile dement may clarify this:

"We have eaten nothing the whole day—coffee and bread—coffee—the wife would like to cook, if she got anything, but the whole day she has nothing but coffee and bread—but that is nothing; the man must stop eating, the children must eat—aye, aye, aye, that is pretty strong; the children with nothing more to eat, nothing but potatoes—the father has eaten the potatoes; the mother has nothing, the children have nothing; so it has gone from one day to the next, the children have eaten nothing but potatoes and coffee—oh, God, we have finished, we have eaten nothing, nothing, nothing at all; that should not be—where we are we have coffee and potatoes—that is nothing—nothing but coffee, coffee, coffee," and so forth.

In close inner relationship to the uniformity of the flow of ideas stands another disorder, superficially rather unlike it, the *circumstantiality*. We understand by this, the modification of the flow of thought in which not only the essential and necessary

parts of a line of thought but also a comparatively large number of the non-essential and chance ideas accompanying, are produced with complete distinctness. By this process, on the one hand the conclusion of the series of ideas, the arrival at the attempted goal, is constantly put off and delayed; on the other hand the entire thought process is not visible at a glance because the circumstantial crowds itself into the foreground just as much as the essential. This disorder accordingly depends on an incomplete viewing of the ideas according to their significance for the process of thought then under way. Therefore the progress of the thinking is not confined to the direct line of action, but it depends upon all possible unimportant side conditions. However, usually, it finally reaches its goal, because the leading idea does not get entirely lost in the details.

The simplest form of circumstantiality is met in the common talk of uneducated people in whom the arrangement of the ideas according to their importance is carried out only incompletely. V. d. Steinen observed it is a remarkably exaggerated form in the peasants of Central Brazil. The less developed conceptual thinking is, the stronger the sensory constituents stand out in the general ideas, the greater will the tendency be to stick to the details and to the unimportant in the process of thought. Hence the great difficulty in obtaining concise, material answers from unintelligent people, their inability to exclude the unessential from their speech, their proneness to relate about an occurrence differently than at the beginning, and to distinguish what they see from what they think or only suppose. Not less well known is the circumstantiality of old age. As a result of the gradual fixing of the thought processes in these cases longer chains of ideas run off quite ordinarily as soon as they are started by any sort of impetus. These chains of memory pictures, of fond thought, of common experiences of life, are always connected to the single members of the thought process under way and interfere with the rapid, conscious continuation toward a goal, since they cannot be suppressed but must first be discharged.

Great similarity with this disorder, which is naturally accustomed to be developed strongest in pathological old age, is displayed by the circumstantiality of the epileptic. The narrowing of the circle of vision makes it impossible in such patients to maintain a distant end in view clearly and permanently as a guide; only on the side of the detailed and the near at hand do they find their way along, groping as it were. Therefore, they always have to make the same circumlocutions to the same tokens, if they are to reach their goal at all. An example of this is given by the following extract from a very voluminous life history:

"Before one acts to believe what has been told him by other people, or what he has read in the almanacs, one must convince himself firmly and must personally review, before he can say and believe, the thing is good or the thing is not good, first investigate and try out and look everything over, then can he say the thing is good or not good or not well; therefore I say myself, if one gives an opinion about a thing or wants to determine a thing sufficiently, or wants to speak the truth rightly, the thing is correct or the thing is not correct, so each man must investigate the thing as if he thought he must answer for the thing before the trinity God and before his Majesty, the King of Prussia, Wilhelm the Second, and Kaiser of Germany. I will again write further what the soldiers have told to me."

A last great group of similar disorders of the thought process is characterized by the lack of inner coherency. The single members do not group themselves under definite points of view whose effect comes out in their selection and combination, but they stand beside one another more or less without connection; the talk shows no uniform progress but a goalless arrangement one after another of hogde-podged ideas. It is impossible from them to select a definite content; most often the most varied circles of ideas may be demonstrated, but all of them only in hints and fragments without consistency and finish. Frequently the influence of chance occurrences, especially of external impressions, makes itself noticeable in the emerging ideas.

Among the clinical modifications of the disorder here presented, we are in a position perhaps to distinguish two chief forms of essentially different meaning. In the first, there still exists a certain connection of the single members, even though rather incomplete and often quite superficial, but this is often no longer recognizable in the demonstrations of the patients, since they repeat only fragments of the thought process. The fundamental is formed essentially by flightiness, rapid change and occasionally complete loss of the leading ideas. As a result the flow of thought shows many changes of direction and deviation from the normal path. The accessory ideas which constantly arise, the chance sense impressions, which are suppressed in logical thinking by the directing froce of the leading ideas, turn the drifting attention to themselves at once and so interfere with the carrying out of the thought process in the manner laid down. The characteristic disorder is, therefore, the *increased distractability*. For the most part we succeed in getting only short answers to simpler questions, even though the comprehension in itself is not so much disordered. If one demands the exercise of more difficult mental labor, it is impossible as a rule to "fix" the patient sufficiently long upon the task, since the ideas aroused are immediately suppressed by others into the background. We term this form of pathological lack of coherency of the thought process, this planless wandering of the course of ideas "from hundreds into thousands," with the name of *flight of ideas.**

Liepmann has characterized the flight of ideas as a disorder of attention and certainly rightly. The attention not only has the task of bringing the emerging ideas into the focus of the consciousness and so bringing them into clearer illumination, but also of firmly fixing those leading ideas under whose influence the choice of the ideas presenting themselves results; perhaps both processes coincide. Therefore, inattention and distractability are always associated with one another. But the attention is in the last analysis a will activity; it is regularly accompanied also by evidences of external will activities. The flight of ideas, therefore, occurs at any place where the capability for the checking of lasting, even will tensions is influenced, whether the will is simply dormant, or whether its excitements discharge themselves into detailed, varying impulses. Indications of a miscarriage of the leading ideas can be discovered in the normal life even, if we give free course to our thoughts in sweet do-nothing, to loose the fetters which keep them in definite paths in "meditation." The phenomenon becomes still more distinct in the real dream where the general ideas as contrasted to the sensory memory images, fall into the background. Here we find to an extremely painful degree the impossibility of pursuing a thought to any extent, of firmly grasping an emerging series of ideas. Hence the many remarkable changes in the dream pictures, the sudden immediate changes of the total content of consciousness. Perhaps this peculiarity of our dream consciousness contributes in giving the impress of real experience to the changing images; they are independent of our chain of thought as may also be the creations of our imaginative powers.

It may appear doubtful whether these experiences belong to the flight of ideas. On the other hand, in fatigue we may not infrequently have before us light grades of that disorder. Here, also, we lose to a certain extent the control of our thought process. We may no longer be able to hold the goal firmly in sight and catch ourselves more and more frequently in digressions in the most varied directions, from which we have to force ourselves at first to return to our starting point. Finally, we are quite unable to remain longer by the same object; at the same time, the composite understanding of our task becomes more and more lost. A very similar process takes place under the influence of alcohol. The aimless silly talk of drunken men is sufficiently well-known. The intoxicated man is unable to follow an explanation and also in his thinking and talking he does not for a moment stick to the question but constantly loses the thread,

*Aschaffenburg, Psychol. Arbeiten, IV, 235; Liepmann, Ueber Ideenflucht, 1904.

even though one tries to hold him to the subject by frequent reference to the point of departure.

With the term flight of ideas there is ordinarily associated the idea of an accelerated stream of the single thoughts. Men have even written about a precipitation of the formation of ideas, of so voluminous a production of new ideas that the lack of connection was probably conditioned solely by the lack of numerous intermediaries which could not be expressed rapidly enough. This conception has been proved untenable by sufficient evidence. At times the wealth of ideas of those showing flight is nothing short of great, but we see this disorder frequently enough even in striking poverty of ideas. In this case, however, the rapidity of the combination of ideas is never increased experimentally, but, on the contrary, is distinctly delayed; those with flight, at times, speak quite slowly. On the other hand, it is correct that the single ideas are uncommonly fleeting, rise quickly and disappear again, and that they can touch upon the most varied regions in a short time because of their constantly new origin. Because of this flightiness, of course, and the kaleidoscopic change of the most multitudinous ideas, the appearance perhaps results that manics think faster than healthy persons.

The direction of the flow of ideas in flight of ideas is determined in the single case by outside impressions, then by arising ideas, but finally, where such interruptions are lacking, by the associative connections of the constituents which follow one another. Since no lasting leading ideas control the connection according to an inner plan, the different constituents of the ideas can make their influence felt upon the arousal of new processes of consciousness. So we recognize conditions in which the combinations of ideas appear to be conditioned quite chiefly by single sensory memory images, in the dream, in certain poison deliria, especially in opium smokers. Vivid imaginative ideas follow one another here in gay order, develop from one another, freed by the firmly knit structure of the abstract ideas. As a result there arises a gaping series of pure brain cobwebs without inner connection and without explanation by the more general experiences of life whose more distinct origin in our consciousness would make it possible to recognize distinctly the numerous contradictions and the inner lack of truth of the strange experiences.

This delirious form of the flight of ideas is closely related to the hypomanic *profuseness* in which the patients may always be distracted by neighboring ideas, memories, fancies, are open to every attempt at interruptions, interpolations, and decorations, and are always getting into by-paths and can only be brought back to their object by constant suggestions. An example of this is contained in the following fragment of an answer to the question: "Are you ill?"

"—— in M. my mother has still another brother, a rich, distinguished man; he has a second wife now, yes, I am not like you mean; my brothers and sisters have always bothered about my affairs, I am interfered with; they did not like the husband that I got; I am the oldest but also the smallest. From the age of twelve, I have had to work hard till forty-eight; I got it the hardest. My husband let me travel to the shrine of Mary, the poor fool! If I had known that I was going there, I would not have gone for 2,000 marks; I wanted to go to Mary's shrine; so an altar has appeared here; I have wanted apples and pears from Paradise; Dr. K. has eaten some of the cakes and has drunk sweet wine. I have black grapes which have been planted and fallen; now I pressed them out in a clean cloth and into an earthen jug; now there is sweet grape-wine. It was Saturday; on Sunday one must have cakes; I made dough early and our baker S. in K. baked it and it cost nothing to bake it, for I get it as my loaf from the baker. Then Dr. K. said his wife could not bake so well; he had such a good for nothing," and so on.

At times in these deviations the influence of certain directions of thought makes itself distinctly apparent, and these are excited by chance but do not lead freely to a goal. It then comes to the enumeration of related trains of ideas which is first interrupted again

by any related association whatever. Aschaffenburg has produced in this connection some very noteworthy examples of a manic patient who once wrote down 589 names one after the other in telling about his acquaintances. At another time he produced 49 names of places, among which the following group occurred:

Coburg - Gotha - Eisenach - Gastein- Ems-Mainz-Mayence-Mayonnaise-Hummer-Stockfisch-Enterich-Pfau-Truthahn-Erfurt-Apolda——

We recognize distinctly in this the planless serializing of the names of cities, the breaking of the series by a clang relation, the arising of a new enumeration of wholly different content and the immediate return to the first series. The connecting link in this case is chiefly the content of the ideas, apparently for the reason that in the written characters the sound could play no part. However, there is a certain influence of the speech usage—"Coburg-Gotha"—and the similar sound "Mayence-Mayonnaise"—indicated. The stronger does the influence of the speech ideas become, however, for the flow of thought, the more do we come in the case of the connection of the content to a heaping up of the habitual *speech associations*, ordinary word combinations, constant modes of speech, finally to the linking of the ideas according to pure sound similarities. It is this disorder which is usually designated in the narrower sense as flight of ideas; perhaps one might contrast them as "speech" flight as opposed to the "inner" flight of ideas caused by the inherent constituents of the ideas.

It is apparent that a speech flight of ideas will take place in general when the tendency exists strongly to grasp the thought content in the speech form. That occurs chiefly in pressure to talk which can show itself chiefly or exclusively in addition in written productions. Flight of ideas occurs not rarely also in extremely inhibited patients; they complain of the fact that they are always thinking of the most varied things, that the whole world must be running through their brains. As a rule we will not be concerned, in these cases, with speech forms. Without doubt there also occurs an inner pressure to speaking in which the thinking takes place in speech modifications in spite of external inhibition. Even from normal experience it is known that, especially in conditions of emotional excitement with fatigue, one may be prevented from going to sleep by the pressure to keep up inner speech or to write letters. Where such an inner pressure to speech with outward inhibition of the will occurs in pathological conditions, in manic-depressive psychosis, speech flight of ideas may also take place without actual speech demonstrations.

The peculiar sort of the associative connections in the speech flight of ideas makes a predominance of the speech movement ideas apparent in so doing. In the tendency to similar sounds the word sound images might very well play the chief role. On the other hand, the frequency of word completions, of constant methods of speech, and of translations, which we certainly produce chiefly by the speech and not by the ear, points far more to the predominance of the combinations fixed by speech. Also, for the rhymes which make us repeat involuntarily, the same thing must be of influence. Moreover, the same sign of the occurrence of purely speech associations appears in a series of conditions, all of which go with motor excitement, in the smoker, after physical exertions and after wakeful nights. If we consider that extreme speech flight of ideas is observed only in diseases with pressure of speech and may be noticed in writing, in inner or outward speech, then the special significance of the speech movement ideas for the shaping of this form of the flight of ideas becomes very apparent, as Aschaffenburg has claimed chiefly. In severe manic excitement the huge mass of talk can carry the flow of thought completely with itself, of course. "The nail on the wall" began such a patient, pointing to a nail, but then he continued: "hears his own slander." Finally even the form of talk becomes lost and is reduced to a chain of single, disconnected fragments. An example of the complete solution of the inherent coherency is shown by the following copy taken in the case of a manic patient:

"Flood-maw-mammut-blackwhite-slip-skinned the head-snip, snap-snip, snap, rattle-

Orsowa and Gradisca-Pump-Devrient-Kersowa-Kousso-Odessa-Carmen-Grossmann-Ernestin-zick, zack, zuck-Decluse, Levit-Trier-Treviran-Tribites-Trevianda-Demimonde-Mandeck-Hirschdreck-iodine-water-Appolinaris-Edinburg-Gries-Aumüller -Abel-Babel-Babylon-hose-wall-respirator-foe of bears - Schuwaloff - Rechberg - Cicero - Manuta-Mantua - Kalakaua - Sendelbachergasse - Nauphia-noble-Adria-light-to Belt-Grindach-Tegernbach-out behind-Sedelmayer-sea-Au-Ringseis-to the left-listen, the scamp has brought his mother out-black to become-yes, very pretty-Kakao-Mumps-Kaiser and Realm-Zoroaster-Hansa-38 Kőpf-Nicaea-Constanz-conflagration-Huss-brother-in-law-filth-Theriak-pereat mundus-ans-Hansa," and so on.

In certain places (water-Apollonaris, Nicaea-Constanz-conflagration-Huss) one may still recognize an inner connection of the emerging ideas. For the most part, however, similarities of sound play the intermediate role, so far, of course, as any connection is apparent at all. Since the series was produced in a comparatively long period of time, naturally many other combining members may have remained unexpressed.

The flight of ideas we may compare in these cases as a second form of an incompleteness of the flow of thought, with the incoherency as it is peculiar to dementia precox in the widest interpretation. Since we still know nothing of the deeper basis of this disorder, it is very difficult to characterize its essentials sufficiently well. We are dealing here with a poorly retained external form of speech with a more or less complete loss of the inner and outer connection of the series of ideas. The flow of thought no longer shows any relation of the single constituents to one another, as in the flight of ideas, but the most unlike ideas are arranged upon one another completely without connection. There we were in a position to trace the origin of the thought to a certain extent by which we arrived at the ever new ideas; here, on the contrary, connecting members between the ideas which follow one another are almost never recognizable. Moreover, while the course of ideas in the flight is constantly changing and therefore never arrives at the attempted goal, and is always describing new circles, here an advance of the process of thought in any prescribed direction does not usually take place, but only a planless travelling around in the same general paths with numerous startling aberrations. Often similar twists are repeated, apparently for the most part in wholly unclear and contradictory forms. The distractability through inner and outer influences may be very great in these cases, but the ideas newly called up subserve no change of direction, but simply push themselves in without connection into the distracted thought tendencies. One may succeed often without difficulty, by interjecting questions into the midst of the hodge-podge, in getting a series of well ordered answers. The following example from a katatonic patient may serve to explain these peculiarities more closely, the questions of the physician are enclosed in parentheses:

(Why are you here?) "Because I am the wife of the Kaiser. My dear parents were already there and everything was all right there and has given me permission; I have also learned stenography. Well, David, how are you? Yes, so, as compensation reservist. Delusions of grandeur. Wife of the Kaiser. (Are you feeling well?). O, thank you, very well, because the ruler has given permission for it, yes, we will be the best of friends again. Goodness, my brother Carl David the first and Olga of Mühlhausen. Oh, just let me write. (Why are you here?) Crazy, delusions of grandeur. (What?) Old cask, from Heidelberg, student as merchant, for our Willy, Merchant should also do that. Yes, indeed, go on. I will not be to blame; I did not order anyone to do that; goodness, from there on evenings, as we were together, yes. (What was there?) Nothing, nothing at all. Heilbronn (laughs) nothing at all. For God's sake, so everything is taken up. Yes, indeed. (How old are you?) August 22, 1872. (Do you want to go from this place?) I don't know; if he comes, I am there; I will not run away from him, either. (Laughs.) I must keep chewing (makes a noise with her teeth). You may rub me again on the back; I have nothing

against it. (Grabs for the watch chain). The chain is nothing anyway. Now I want to see the watch. I will take the liberty; among friends anything is permitted. Adam and Eve; oh, it is not made of gold. What I said, it was all true, what belongs to being related; I have said it from a to z; I can not eat everything at once with you; this was not to blame either; I will be to blame for it all," and so on.

The turning off produced by addressing her, sounds, visual impressions may be easily followed in this case. A return to individual turns is noted; this comes out more strongly in the following example which is taken from a long copy in the case of a katatonic patient.

"Go away, so the merchant's wife comes and says she is rich and I am poor; she means I would be the *vine;* there she goes and *begs* of the *vine.* By *praying* the *Catholics* mean "oren." The *woman* does not act in *consciousness* the really *conscious* act. They have the waltz tempo in them; they *hear* and do not *hear,* because everything is through one another; one speaks French, the other Latin. I am considered the greatest sinner in all Heidelberg, but I am not the one that the *Catholic* Church takes me for. It honors me as the ideal. The woman who went to America on the ship that went down has taken the *iron* and the dye by the *pressure of the hands,* but not by the *pressure of the bloody hands,* by the *pulsating blood,* but not by the *pressure of the iron hands.* My strength depends on *iron,*" and so on.

In the entire conversation, which was about eight times the length of the example above, there occurred in the same manner many times the expressions iron, gold, steel, brass, phosphorus, silver, money, electricity, strength, thermometer, hand-joint, sea green, pot plant, root, religion, and some others and not one after another immediately but in very different positions. The expressions which are slowly produced seem at first to have a certain sense; but on more thorough test the complete distortion of the thing appears very clearly. Many patients take pleasure in peculiarly startling combinations of ideas. A very clear and sensible patient expressed in the tone of quiet reading: "Up there you have a real shirt button which usually gets prepared by me. The sergeant-major's spirit lies in the rot. It is not round, even to turn into the spirit of the caste. I have satisfied the six years' honor duty. They even take out of the mouths of the children."

The connection of the ideas according to sound is less powerful here than in the flight of ideas. Not infrequently the influence of the speech sound shows itself in the flow of thought in the form of "plays on words." We are concerned here with distortions and caricatures of single words or modes of expression; they are to be regarded as the outcome of that disorder which we will learn to recognize later as mannerisms. Thus sang a patient for hours at a time: "Thanklessness is the reward of the world." Another spoke of "cheese de gravy" when he had soup and cheese, demanded herring salad for his "katertonia," was of the opinion that he was not suffering from katatonia but from "pussy-catatonia," repeated when mention was made of a Douceur, that it was not twelve o'clock yet (douze heures). The same patient joked, however, without relation to word sounds: "You are Moltke, indeed; you aren't saying anything;" "I have been here twice nine months already; now you send me to the woman's clinic to die at last." These examples remind one of the "joking tendency" observed in those with brain tumors.

With increasing excitement sound and rhythm may completely control the demonstrations of the patients. Moreover, the result bears quite a different stamp from that given by the flight of ideas. There is especially lacking the exciting leap from one idea, one clang association to the other. In place of this there comes out the perpetual return of the same sounds and words and accordingly the monotony and lack of content of the expressions. An example is the following piece of rhyming:

"Dear, dear rider mine—ride yourself alone—dearest dear, how can I be alone

—how I shine—dear hand—it is only land—dear God, I soon wake again—if you only give me mother again—dear God, what will I get—only the old gifts—in Thee only—is mother wholly in—dear God, I can wait—I want nothing but mother dear—dear, dear, dear mine—never can a thought be thine—thoughts do I not advise—the hand alone is duty's duty," and so on.

Finally the speech demonstrations of the patients may take place in a series of syllables, letters or sounds. While in the severest forms of the flight of ideas the chain of similar sounds may reveal a progressive change, while the majority of speech expressions present real words in those cases cited, we come in these cases to an entirely senseless repetition of the same constituents with very slight changes, to "plays on sounds" according to the model of the following example:

"Ellio, ellio, ellio, altomellio, altomellio—selvo, elvo, delvo, helvo—f, f, f, dear father—f, f, f,—dear father—e, e, f—old and new—f, f—f, ,—Catholic Church—w, e, f—Catholic Church—w, e, f," and so on many times in monotonous repetition.

The flow of thought in this example does not progress by the speech sound to new ideas but sticks to it firmly without any accompanying idea of a thing. Especially characteristic are the senseless rhymes.

The common result of all disorders which loosen or destroy the inner coherency of the ideas, is the appearance of a very frequent sign of disease, the *confusion*. The mode of origin of this phenomenon is, as we have pointed out, a very manifold one. Where the loosening of the coherence of the thoughts is caused essentially by flightiness of the leading ideas, there arises the confusion due to *flight of ideas* with increased distractability and tendency to external associations, often speech in character. Unconditioned emergence of quite different sorts of ideas without any connecting link produces the confusion of *incoherency* which frequently goes on with indications of stereotypy and plays on words. Perhaps we can also differentiate a *dreamy* confusion in addition, as it is peculiar to the delirious states. In this, in addition to the disorder of comprehension and the rapid fading of the perceptions, the marked occurrence of purely sensory constituents of ideas may play a part in so far as it presents us gay, strange experiences, without our being in a position to comprehend the inner contradictions.

Surprising emergence of massive, new trains of thought, joining one another loosely can lead, apparently, to a "combinatory" confusion; our head swims because we are not in a position to arrange and to grasp ideas which suddenly shoot up. This form of confusion occurs in those forms of disease in the further course of which the imaginations which rapidly arise are elaborated into a permanent delusional structure, just as we also work over a new idea which confused us at first, into our circle of ideas gradually and so recover the inner unity and the connection of the idea. Such a patient characterized this confusing onrush of presentiments and suspicions to me as a veritable "Hun slaughter of the soul." In these cases there also occurs frequently the emergence of falsifications of memory under the influence of the actively moving power of imagination. Frequently, moreover, the occurrence of multitudinous sense falsifications is considered as the cause of an *hallucinatory* confusion, just as in the healthy person the orientation gets lost if he suddenly sees himself displaced into an intricate mixture of new, puzzling sense impressions. In old hallucinations we see, moreover, that incomplete arrangement of the thoughts can take place in spite of numerous sense falsifications.

Also, the mental inhibition which makes difficult the understanding and the mental elaboration of our impressions, appears to be able to produce a certain form of confusion which we will designate perhaps best as "stuporous" confusion. Frequently we are concerned in this, doubtless, with the combination of stupor and of flight of ideas. Finally a very important role in the origin of the various forms of confusion is played by the emotional processes. Their powerful influence on the clear connection of the thoughts is taught us already by experience of the healthy from the slightest arousal of

the embarrassment and the prejudice to the mighty emotional fluctuations of fear, anger, and despair. In disease conditions with their thorough shattering of the emotional equilibrium, this influence naturally is undeniably much more powerful. Apparently, therefore, we have to do very frequently with inhibitions and disorders of the flow of thought by emotional fluxes, which can make themselves felt in the various disease conditions with different strengths.

THE MANAGEMENT AND TREATMENT OF DELIRIUM TREMENS.

By

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IT IS practically admitted by all authorities that delirium tremens is due to impaired nutrition of the nerve cells (cell starvation), auto-toxemia, alcoholic irritation and certainly in many cases to the "reaction," if such it may be called, which follows the too rapid withdrawal of the narcotic.

Some years ago a great many authorities claimed that the sudden withdrawal of alcohol never caused delirium tremens; that it was always due to the irritation of the brain from the direct action of alcohol, and consequently came only during a hard debauch. I do not believe that the use of alcoholic drinks even in quantities usually called excessive, for a short time only, will cause true delirium tremens. After an experience extending over twenty-five years, during which time I have observed a large number of cases, I believe that aside from acute infections, injuries, etc., the majority are due to the too rapid withdrawal. We must bear in mind that the inebriate uses alcohol for its sedative action which temporarily, at least, quiets and soothes the nerve irritability due to its prolonged use, and every function of the nerve cells in such cases is performed properly and painlessly only while the cell is kept in this quieted, soothed condition. When liquor is withdrawn suddenly or too rapidly, no time is given for the re-adjustment of the functions of the cell, and the result is what may be called a "nerve storm" which may be delirium tremens, an alcoholic convulsion, insanity or collapse. Indeed the sudden withdrawal of any narcotic, alcohol, morphine, heroin, etc., may result in the same condition. In an editorial in the *Journal of the American Medical Association*, the writer aptly describes the condition of the inebriate as follows: "The patient cannot eat unless he has a drink; his circulation is not good unless he has an alcohol dilator; his brain does not work unless he has an alcohol sedative; his muscles do not work co-ordinately unless alcohol controls the nerve cell irritability. Suddenly deprive him of his alcohol and cerebral irritation reaches the point of delirium, the heart becomes rapid and irregular and the circulation fails." Savage and Goodell in their "Insanity and Allied Neuroses," state: "In some cases, after the depression of the abstinence, an ordinary attack of insanity may follow, or the patient may become changed in mental character, and remain perverted as long as he lives."

The condition, then, in delirium tremens is one of autotoxemia due to defective metabolism, impaired nutrition particularly of the nerve cells and consequent nerve irritability, causing restlessness, delirium, tremor and pronounced insomnia. These are the indications which direct proper treatment and the first requisite is to start elimination by the use of a brisk cathartic, and as a rule it is better to use one which has little tendency to cause nausea and vomiting. Indeed, in many cases vomiting is a source of anxiety to the physician and every effort should be made by him to avoid giving any medicine which is likely to cause that symptom, and if it is already present, to quiet the stomach as quickly as possible. The Compound Cathartic pill (U. S. P.) is a good one and two of these should be administered promptly. If they do not act within a reasonable time, follow with Epsom or Rochelle, salts or any of the laxative waters, e. g., Hunyadi Janos, Abilena or Carabanna. I do not administer larger doses of a mercurial until two or three days later, as it often causes nausea and vomiting, inter-

fering with the administration of foods and other medicines. Of course, a urinalysis should be made just as soon as a sufficient quantity of the urine can be obtained, so that the condition of the kidneys may be determined and if the specific gravity is below 1.015, even though no albumin appears, the microscope should be used that we may detect the presence of tube casts and be on guard against uremic poisoning.

Attention should next be directed to the nutrition and I regard this as the most important part of treatment. Tirard says, "In every case of delirium tremens the nourishment of the patient is of prime importance," while Osler says, "Careful feeding is the most important element in the treatment of these cases." It has been my custom for years to force nutrition by placing the patient upon some kind of food easily digested, repeated every hour while he is awake. These foods should be varied according to the judgment of the physician and include malted milk, malted cream, malted food, Mellin's food, somatose, eggs, raw with pepper and salt, soft boiled or poached, hot sweet milk, beef extract (although this probably acts more as an appetizer and stimulant than as a food) while later we may use milk toast, oyster stew, soups, sweet milk diluted with Vichy water, etc. For a time at least it is best to use one of these foods which can be administered in hot water and my preference is malted milk, two or three heaping teaspoonfuls in a glass of water as hot as it can be drunk and added to this sufficient pepper and salt to make it palatable. The hot water quiets gastric irritability, increases the action of the kidneys, as well as the sweat glands, and has a generally quieting effect on the nervous system. The malted milk or cream furnishes nourishment in a form which is quickly absorbed even by an alcoholic stomach and if somatose is mixed with it at intervals a proper combination of malted and meat foods is made. Eggs, broth, milk toast, etc., may be used, and if the patient objects to any kind of food through the delusion that it is poisoned, it can be changed as above indicated until he will again take the original or preferred article. I know that in some cases difficulty is experienced in getting the patient to take food as well as medicine, as he labors under the delusion that it is poisoned and given for the purpose of taking his life. If he harbors this delusion against one attendant, usually the physician or a friend can prepare the same medicine and get him to take it with little difficulty. Possibly in an hour or two the delusion has changed and the attendant from whom he would not take the medicine an hour before will be looked upon as his best friend and the patient will take anything he may bring him in the way of food or medicine.

The physician should now determine as accurately as possible the daily quantity of liquor which the patient was using previous to the attack. This will give him an idea as to the quantity necessary to re-establish what has become the patient's "normal condition" as regards sedation from it, and I prefer to use whiskey exclusively, as I believe it answers the purpose best in these cases and the quantity of alcohol can be gauged with more accuracy than if given in the form of wine, beer, etc. Believing that the majority of cases of delirium tremens result from too rapid withdrawal of liquor, it is my custom at the beginning to administer whiskey in one or two ounce doses every hour or two as the patient's condition indicates. Through its sedative action it has a tendency to quiet the tremor, to lessen the hallucinations, illusions and delusions, to establish mild perspiration and generally speaking to make the patient much more comfortable. It also in these cases assists the functions of digestion, absorption and assimilation because they have so long been carried on under an alcoholic. When the patient has obtained several hours' sleep the quantity can be rapidly reduced and the patient can be taken off liquor entirely in from three to five days.

As soon as the patient improves so that he realizes where he is and the delirium has practically disappeared, the time between the doses of both food and whiskey can be increased to two hours, then three hours and when the quantity of the latter has been reduced to five ounces in twenty-four hours it can, as a rule, be discontinued.

In every case of delirium tremens an attendant should be placed in charge with

instructions that the patient is not to be left alone even for a moment. Laboring, as he is, under hallucinations, illusions and delusions, which in many cases at least are terrifying, if he is left alone he may make a dash for and spring from a window and his fall may result in a serious if not fatal injury. I knew of one case which in this way fractured both femurs and was a cripple for life. The patient may instead of jumping from a window obtain a knife, razor or pistol or some other means of suiciding or may use one of these in attacking the attendant.

At night the room should be dimly lighted, the patient never being kept in darkness, as this intensifies his morbid fears. To be sure a bright light should be avoided as this causes wakefulness and defeats our efforts to obtain sleep. I earnestly condemn the strait jacket, strapping the patient to a bed, tying the patient's hands or feet, or confinement of any kind so far as keeping patient in one position is concerned. Such action intensifies delusions, causes him to struggle, etc., and therefore leads to exhaustion which in all cases we are striving to prevent. If patient is very violent or shows a tendency to attack the attendant, two or even three attendants may be placed with him to prevent him from harming himself or others. Unless it is an asthenic or a violent case or one which is apt to be troublesome on the street, the attendant or attendants should be instructed during the day time to take the patient out for a little exercise, as this allows him to "walk off his excitement," gives him a change of scene and tends to quiet the delirium.

The third indication in the treatment of these cases is to produce sleep. In the past we, as medical men, have made the mistake of frequently repeating hypnotics in large doses with the idea of forcing sleep and much harm if not loss of life has been the result. I would quote in this connection from an article by Dr. Ransom, giving a record of five hundred cases of delirium tremens with a death rate of 26.4 per cent. In two hundred and sixty-one of these, sedative drugs were used and the death rate was 41.7 per cent. In fifty-five of these two hundred and sixty-one cases a small amount only of these sedatives was given and the death rate was 21.8 per cent. In seventy-two of the cases in which the largest quantity of sedatives were used the mortality rate was sixty-five per cent. It is but fair, however, to infer that the cases in which the largest quantity of sedatives were given were the ones which were in the most serious condition.

Amongst the drugs used for sleeplessness we find bromides, chloral, hypnal (a combination of chloral and antipyrine), sulfonal, trional, veronal, chloralamid, morphine and hyoscine. It has seemed to me that the bromides, while they have a tendency to quiet the motor symptoms, act very slowly; and while it is considered good practice to give bromide of potassium in fifteen to thirty grain doses, repeated in from two to six hours provided there are no contra-indications, other medicines must be relied upon to give the patient sleep. The whiskey will do more good in quieting tremor and will do it much more quickly, and hence bromides must be used as adjuvants only and not to the extreme which has been recommended by some authorities. I consider chloralamid the most reliable of the hypnotics in these cases. It certainly acts as a nervous sedative upon both brain and cord, and it is apparently without depressing effect upon heart action. This opinion is corroborated by an editorial in an eastern journal stating: "In one case, for example, the drug proved to be perfectly safe when it was given to a man suffering from delirium tremens complicated with pulmonary congestion, a dilated heart and marked multiple neuritis." Cushney says: "From blood pressure experiments * * * * it has little or no action upon the circulation except in poisonous doses * * * * on the whole it would seem to possess the cerebral action of chloral without producing its effects on the circulation." It should be given just before the retiring hour and in doses of twenty to forty grains. This should be dissolved in alcohol and some diluent such as syrup or elixir added, and as it is decomposed by hot liquids it should be given in a little water at ordinary temperature. If the patient is not asleep

in two hours he should be given bromide, twenty to thirty grains, which may be repeated through the night from two to four hours apart. If this does not produce sleep, the patient should receive his whiskey and nourishment each hour, but nothing further in the way of hypnotics until the next evening. At the usual retiring hour, fifteen grains of veronal should be given dissolved in malted milk, and whiskey and the bromides during the night as already advised unless the patient is sleeping. Ransom and Scott in their investigation of about one thousand cases, claim that "Veronal is the only hypnotic which does not increase the mortality of the disease." If the patient is not asleep by one A. M., a ten-grain dose of trional can be given with malted milk and whiskey and usually this results in six or seven hours' sleep from which the patient awakens next morning refreshed and generally quiet mentally, at least until evening, when there may be a slight return of the delirium. Through the day-time the patient is to be exercised, at intervals, but not to the point of undue fatigue and the third night another dose of the chloralamid may be given or beginning about one P. M. sulfonal can be given in five-grain doses each hour until thirty or forty grains have been administered, the last dose of which should be not later than eight P. M. Sulfonal is absorbed slowly by the stomach and frequently no effect will be obtained from it during the night if the physician waits until bedtime to administer it. It also maintains a certain hold-over effect and it is not uncommon for the patient to sleep better the second night after its administration than he did the first.

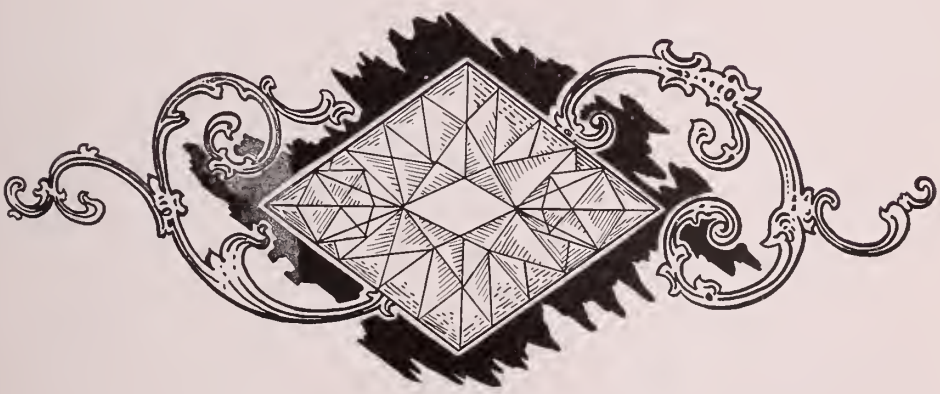
I do not believe it safe in many cases to use chloral or hypnal, as there is a tendency towards exhaustion and they are contributory to heart failure, which is in all cases to be guarded against. Under forced feeding and the above treatment many of these cases will clear up in twenty-four to forty-eight hours. In some cases, however, the delirium may last five or six days, but I have never seen a case in which it lasted longer than six days. I know many physicians use morphine as soon as the patient is visited and use it in large doses. For the violence sometimes observed it may become necessary to use morphine, but if so, the first dose should not exceed one-eighth of a grain and it should be administered about four o'clock in the afternoon and the patient should be seen again in about four hours. The effects of the first dose should be carefully noted and the second dose regulated in size according to the judgment of the physician. I have seen some cases quiet down promptly from a small dose of morphine and others made much worse by either small or large doses, and therefore, I seldom give it, besides it is not often needed. It constipates and therefore retards elimination and certainly it would be contra-indicated if the urine is albuminous. Some alcoholics are narcotized by small doses of morphine and the patient may pass into a stupor followed by coma and death. Dr. Osler says: "Opium must be used cautiously. A special merit of Ware's work was the demonstration that 'on a rational or expectant treatment the percentage of recoveries was greater than with the indiscriminate use of sedatives which had been in vogue many years.'"

Hyoscine hydrobromide finds many advocates. In a few cases a dose of one-two-hundredth to a one-hundredth of a grain acts like magic, but in many cases its well-known action in producing congestion of the brain intensifies the delirium and the patient is worse than before. It occasionally causes Cheyne-Stokes respiraton. Hare says: "Hyoscine is valuable in a very limited class of cases and in this class generally acts more favorably. These cases consist of those who, from acute mania, hysteria, or similar cause, suffer from insomnia and perhaps struggle violently against proper control or refuse to swallow or retain food. In some persons it utterly fails even in this particular type of cases." If it is used it should be given guardedly until its effects can be seen and preferably in a small dose which can be repeated in two or three hours. It has little influence on the pulse and in some cases quiets tremor and leads to muscular relaxation and sleep. Some practitioners combine the hyoscine and morphine and claim to get better results therefrom. As already stated, I seldom find it necessary to give

either and the cases of suicide, injury, etc., due to the patient's becoming violent after the administration of hyoscine in the treatment of both alcoholism and morphinism are bringing it into disrepute and undoubtedly its administration has in the past produced harm.

I have not mentioned Paraldehyde because it has such a peculiar taste and is so likely to cause nausea and in addition is very uncertain in its action. A warm bath if the patient will enter it willingly and remain for any length of time, materially assists in quieting nerve irritability. Not infrequently patients go to sleep while in the bath and if watched closely may be allowed to remain for some time even though sound asleep. After prolonged exercise, sponging the body with tepid water soothes and quiets and is helpful in obtaining sleep. If this treatment is followed, heart failure will seldom be noted and the use of strychnine will be found unnecessary. If heart failure threatens it would call for strychnine in proper dosage, repeated as the judgment of the physician may indicate. Digitalis is slow in its action and cannot usually be relied upon to act quickly enough to be of service in these cases. In addition it is hard on the stomach which is generally inflamed and therefore should be given cautiously. Digitallone (P. D. & Co.) or Digitalin may be administered hypodermically and I have seen good results follow their use.

It is my experience that the majority of asthenic cases and those showing evidence of heart weakness result from the too rapid or sudden withdrawal of liquor and the lack of proper nourishment, although I can conceive of complications such as pneumonia, gastritis, myocarditis, etc., where the condition of the heart will need prompt attention and treatment. Should convulsions occur the physician should not jump at the conclusion that they are purely alcoholic in character and treat them as such; as they may be uremic and therefore of a much more serious nature. In all such cases morphine or other opiates should be used with great care if used at all. In the convalescent stage of delirium tremens most patients should have appropriate tonics and these should be continued for some time.



IS GENIUS A SPORT, A NEUROSIS, OR A CHILD POTENTIALITY DEVELOPED?

By

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(Continued from May, 1916.)

MORE than thirty years ago I took issue* with the claim of Lombroso** that genius was an epileptoid mental state. I then pointed out that much of the evidence adduced by Lombroso admitted of many other explanations than the one given. Genius, I showed, when it occurred with defect was a normal state which had survived congenital defect and the periods of stress, and that it was neither a sport nor a neurosis but a child potentiality developed. Sometimes the amount of nutriment being less than that needed for development of body and brain and nervous system, the body was imperfectly developed while brain and nervous system gained at its expense. Sometimes this occurred in the highest intellectual member of a family while the rest remained normal but intellectually mediocre. This condition would result from the strain of one pregnancy while the normal but mediocre individuals resulted from a healthy pregnancy. Many cases cited as illustrations of genius being the product of a defect are of this type. In a recent communication Havelock Ellis† has reversed his position taken in his edition of "Lombroso" and in "British Genius." The work on which "British Genius" was based is the "Dictionary of National Biography." Any alienist who studies this last finds it startlingly defective in biology, psychology and even current history. Thus the insanity of "Carlyle's mother, for which she was treated in an insane hospital and recovered," is not mentioned. Such a source is of very dubious value as an authority. Discussing epilepsy and genius, Ellis remarks: "Epilepsy at once comes before us, all the more significantly since it has been considered, more especially by Lombroso, to be the special disease through which genius peculiarly manifests itself. It is true that much importance here is attached to those minor forms of epilepsy which involve no gross and obvious convulsive fit. The existence of these minor attacks is, in the case of men of genius, usually difficult to disprove and equally difficult to prove. It certainly should not be so as regards the major forms of epilepsy. Yet among the thousand and thirty persons of British genius I was only able to find epilepsy mentioned twice, and in both cases incorrectly, for the National Biographer had attributed it to Lord Herbert of Cherburg through misreading a passage in Herbert's Autobiography, while the epileptic fits of Sir W. R. Hamilton in old age were most certainly not true epilepsy. Without doubt, no eugenist could recommend an epileptic to become a parent. But if epilepsy has no existence in British men of genius, it is improbable that it has often occurred among their parents. The loss of British genius through eugenic activity in this sphere would probably, therefore, have been nil.

Putting aside British genius, however, one finds that it has been almost a common-

**Alienist and Neurologist*, 1887.

**"Man of Genius."

†*Alienist and Neurologist*, 1892-1907.

place of alienists and neurologists, even up to the present day, to present glibly a formidable list of mighty men of genius as victims of epilepsy. Thus I find a well-known American alienist lately making the unqualified and positive statement that Mahomet, Napoleon, Moliere, Handel, Paganini, Mozart, Schiller, Richelieu, Newton and Flaubert were epileptics, while still more recently a distinguished English neurologist, declaring that "the world's history has been made by men who were either epileptics, insane, or of neuropathic stock," brings forward a similar and still larger list to illustrate that statement, with Alexander the Great, Julius Caesar, the Apostle Paul, Luther, Frederick the Great, and many others thrown in, though unfortunately he fails to tell us which members of the group he desires to regard as epileptic. Julius Caesar was certainly one of them, but the statement of Suetonius (not an unimpeachable authority in any case) that Caesar had epileptic fits towards the close of his life is disproof rather than proof of true epilepsy. Of Mahomet, and St. Paul also, epilepsy is alleged. As regards the first, the most competent authorities regard the convulsive seizures attributed to the Prophet as perhaps merely a legendary attempt to increase the awe he inspired by unmistakable evidence of divine authority. The narrative of St. Paul's experience on the road to Damascus is very unsatisfactory evidence on which to base a medical diagnosis, and it may be mentioned that, in the course of a discussion in the columns of the *British Medical Journal* during 1910, as many as six different views were put forward as to the nature of the Apostle's "thorn in the flesh." The evidence on which Richelieu, who was undoubtedly a man of very fragile constitution, is declared to be epileptic, is of the very slenderest character. For the statement that Newton was epileptic there is absolutely no evidence at all, and I am quite ignorant of the grounds on which Mozart, Handel and Schiller are declared epileptics. The evidence for epilepsy in Napoleon may seem to carry slightly more weight, for there is that in the moral character of Napoleon which we might very well associate with the epileptic temperament. It seems clear that Napoleon really had at times convulsive seizures which were at least epileptoid. Thus Talleyrand describes how one day, just after dinner (it may be recalled that Napoleon was a copious and exceedingly rapid eater), passing for a few minutes into Josephine's room, the Emperor came out, took Talleyrand into his own room, ordered the door to be closed, and then fell down in a fit. Bourrienne, however, who was Napoleon's private secretary for eleven years, knew nothing about any fits. It is not usual, in a true epileptic fit, to be able to control the circumstances of the seizure to this extent, and if Napoleon, who lived so public a life, furnished so little evidence of epilepsy to his environment, it may be regarded as very doubtful whether any true epilepsy existed, and on other grounds it seems highly improbable.

Of all these distinguished persons in the list of alleged epileptics, it is naturally most profitable to investigate the case of the latest, Flaubert, for here it is easiest to get at the facts. Maxime du Camp, a friend in early life, though later incompatibility of temperament led to estrangement, announced to the world in his Souvenirs that Flaubert was an epileptic, and Goncourt mentions in his Journal that he was in the habit of taking much bromide. But the "fits" never began till the age of twenty-eight, which alone should suggest to a neurologist that they are not likely to have been epileptic; they never occurred in public; he could feel the fit coming on and would go and lie down; he never lost consciousness; his intellect and moral character remained intact until death. It is quite clear that there was no true epilepsy here, nor anything like it. Flaubert was of fairly sound nervous heredity on both sides, and his father, a distinguished surgeon, was a man of keen intellect and high character. The novelist, who was of robust physical and mental constitution, devoted himself strenuously and exclusively to intellectual work; it is not surprising that he was somewhat neurasthenic, if not hysterical, and Dumesnil, who discusses this question in his book on Flaubert, concludes that the "fits" may be called hysterical attacks of epileptoid form.

It may well be that we have in Flaubert's case a clue to the "epilepsy" of the other great men who in this matter are coupled with him. They were nearly all persons of immense intellectual force, highly charged with nervous energy; they passionately concentrated their energy on the achievement of life tasks of enormous magnitude, involving the highest tension of the organism. Under such conditions, even in the absence of all bad heredity or of actual disease, convulsive discharges may occur. We may see even in healthy and sound women that occasionally some physiological and unrelieved overcharging of the organism with nervous energy may result in what is closely like a hysterical fit, while even a violent fit of crying is a minor manifestation of the same tendency. The feminine element in genius has often been emphasized, and it may well be that under the conditions of the genius-life when working at high pressure we have somewhat similar states of nervous overcharging, and that from time to time the tension is relieved, naturally and spontaneously, by a convulsive discharge. This, at all events, seems a possible explanation.

It is rather strange that in these recklessly confident lists of eminent "epileptics" we fail to find the one man of distinguished genius whom perhaps we are justified in regarding as a true epileptic. Dostoievsky appears to have been an epileptic from an early age; he remained liable to epileptic fits throughout life, and they plunged him into mental dejection and confusion. In many of his novels we find pictures of the epileptic temperament, evidently based on personal experience, showing the most exact knowledge and insight into all the phases of the disease. Moreover, Dostoievsky in his own person appears to have displayed the perversions and the tendency to mental deterioration which we should expect to find in a true epileptic. So far as our knowledge goes, he really seems to stand alone as a manifestation of supreme genius combined with epilepsy. Yet, as Dr. Loygue remarks in his medico-psychological study of the great Russian novelist, epilepsy only accounts for half of the man, and leaves unexplained his passion for work; "the dualism of epilepsy and genius is irreducible."

There is one other still more recent man of true genius, though not of the highest rank, who may possibly be counted an epileptic: Vincent van Gogh, the painter. A brilliant and highly original artist, he was a definitely abnormal man who cannot be said to have escaped mental deterioration. Simple and humble and suffering, recklessly sacrificing himself to help others, always in trouble, Van Gogh had many points of resemblance to Dostoievsky. He has, indeed, been compared to the "Idiot" immortalized by Dostoievsky, in some aspect an imbecile, in some aspects a saint. Yet epilepsy no more explains the genius of Van Gogh than it explains the genius of Dostoievsky."

The argument so frequently employed in regard to epilepsy that the non-apparent is the non-existent appears peculiarly fallacious to any student who has studied epilepsy in the epileptic wards of an insane hospital or in epileptic colonies. Petit mal and nocturnal epilepsy are frequently ignored by friends of epileptics who fix on an attack of grand mal occurring in the day time as the only evidence of epilepsy. The disappearance of grand mal in petit mal or in nocturnal epilepsy gives reputation to various patent medicines for the cure of epilepsy. Scientifically epilepsy is a morbid state of the brain without palpable characteristic lesions shown in explosive activity of an unduly irritable vasomotor center, leading to complete or partial loss of consciousness, which may be preceeded, followed, or accompanied by various phenomena expressing the undue preponderance of some cerebral districts and the suspended inhibitory influence of others. There are but two epileptic phenomena which are accompanied by consciousness: one of these is the aura which in many instances precedes an attack. The other is the imperative conception which may precede, succeed or take the place of an attack. There is only one epilepsy, but the epileptic constitution may have many modifications. The aura may vary greatly in type. It may be an odor, an hallucination of sight, hearing or taste. Anomalous sensations often precede an attack. The patient through these knows that an attack is coming on and is often able in consequence to ward off the

attack by medication or place himself where he can sustain no injury from a fall or may avoid exposure of his epilepsy to friends. Sometimes a disturbance of a motor region of the brain may be an aura. Under a surgical bias these motor disturbances have been held to be not an aura but an epilepsy of themselves. They form the so-called conscious Jacksonian epilepsies. It has been claimed by corporations* that the only form of epilepsy which may be caused by traumatism is Jacksonian epilepsy. It is distinct from both grand mal and petit mal and is not general epilepsy. Jacksonian epilepsy is simply a focal epilepsy that affects only a part of the body such as the arm or the leg and so that its seizures are arm fits or leg fits and not general body fits. In a fit of Jacksonian epilepsy the patient will merely grasp the arm or leg and hold it until he gets over the fit. Probably the most astonished neurologist at this description would be Hughlings Jackson** himself. The claim has also been made by corporations that petit mal and grand mal are distinct types of epilepsy and do not occur in the same person. Considering the innumerable cases seen in private practice, in insane hospitals and in epileptic colonies it is impossible to find any scientific justifications for the claim.† A large number of epileptics pass through life without mental deterioration and often without being suspected of epilepsy. It cannot logically be claimed that the fact that Napoleon drew Talleyrand into a room and then fell into a fit was evidence that Napoleon had power to control his attacks. If his fits were preceded by an aura which he recognized he would, like other epileptics, recognize their approach in time to conceal them or to prevent injury by a sudden fall. The epileptic often claims consciousness during an attack, when he has really been unconscious, by reasoning that since he finds himself reclining on a couch he must have placed himself there during an attack and therefore remembers all its details. Epilepsy occurs from many causes. Traumatism or sunstroke or electric shock can certainly produce it after thirty years of age. All types of epilepsy may occur after this period from the causes mentioned with the same facility with which they do before it. Shock to the medulla may produce epilepsy at any age after ten. Absolute statements about the appearance of any disorder connected with neuropathy are never scientifically justified. Hebephrenia usually occurs between fifteen and twenty-five, but there are cases where the breakdown occurs at thirty. This is in accordance with a tendency to retardation which occurs in many neuropathic constitutions. In my own experience in cases of what is called ideopathic epilepsy the disorder never appeared until thirty-five. In these cases there was no evidence obtainable in petit mal and none of nocturnal epilepsy. Of course, in many cases in men of successful business type petit mal, or even mild nocturnal epilepsy, occurs for years before the first grand mal attack in the forties. Epilepsy has so many manifestations of mental, moral, motor and sensory type that the clinician has to hesitate before accepting the first grand mal attack as the initial appearance of epilepsy. There are many mimicries of epilepsy which differ from true epilepsy only in the fact that the attack is an infrequent occurrence in the life of the individual. The single attack observed in Byron by Millington†† was clearly a laryngeal vertigo complicated by auto-toxemia and attended by loss of consciousness. The convulsive attacks in Greece were clearly due to malaria and its influence on the kidneys. It is possible that other convulsive phenomena reported by Millington†† were simply tics such as result in neuropaths under conditions of great excitement.‡ The convulsive attacks from nephritis, from ergot and toxemias, are often epileptoid attacks which differ from true epilepsy only in the temporary duration of the disorder. The single attack from which Balzac suffered was clearly one of this type. It never returned. This contrasts, as does the case of

*Andreas Pienta vs. Chicato City Ry. Co.
**West Riding Lunatic Asylum Reports, 1874.
†Spratling Epilepsy.
††Curiosities of Medical Experience.
‡Stigmata of Degeneracy. *Alienist and Neurologist*, 1889.

Byron, markedly with the picture drawn by Ellis of Flaubert's attacks. The only thing wanting to the picture is the retention of consciousness by Flaubert. It seems possible, however, that bystanders failed to recognize the loss of consciousness because of its brevity. The argument from the absence of alteration of moral character would not be made by an alienist or the head of an epileptic colony. Epileptics, except during periods of excitement, or suspicion, or under imperative conceptions which take the place of motor attacks, are the most altruistic of patients toward each other. Like everything else in neuroses this altruism depends on the constitution attacked There are epileptic criminals whose criminality is the product of an egocentric mentality, not of their epilepsy. The evidence as to the influence of the epilepsy of Swedenborg on his visions has been very strongly presented by Ireland.* Here are evident the delusions of memory which occur in epileptics and which are strongly suggested by some of the visions of Mahomet. An epileptic delusion of memory is an hallucinatory phenomenon which remains in consciousness as a reality. Religious exaltation is a frequent phenomenon in epileptics and religious visions often remain as delusions of memory. The patient has no consciousness of his attack or of its aura, but describes it at a later time as a religious vision he has seen. In other patients the aura for some time is looked upon as an actual occurrence, but epileptics of fairly good mental balance soon come to recognize its prophetic nature. One patient of mine long before any recognized attack had an aura of three cherubs' heads which gradually changed into a shamrock and then into a picture of the Trinity with the Holy Ghost represented by a dove. Then there was blackness. These hallucinations appeared in his twenty-third year, and continued without other manifestations until his twenty-eighth year, when he had an attack of grand mal preceded by them. On regaining consciousness he found himself on the floor of his shop with his tongue bitten, his clothes dusty and soiled with urine. From that time on he fully recognized the aural nature of the cherubs' heads, and was enabled thereby to ward off many attacks of epilepsy through the use of amyl nitrite. The only conclusion that can be drawn from the history of epilepsy and genius is that, while epilepsy may co-exist with genius, it does not always destroy it, and never creates it.

*Through the Ivory Gate.

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PATHOLOGY OF NEURO-SYPHILIS AND ITS RELATION TO PROGNOSIS.

By

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WE HAVE now pretty well outgrown the old concept of syphilis of the nervous system being a tertiary manifestation and, therefore, something to be looked for only late in the disease, for we know the nervous system is involved very early; indeed, I have seen profound manifestations of this kind, even as great as syphilitic hemiplegia, while the initial lesion was still present, and, as we become more complete in our examinations and pay especial attention to the second and eighth nerves, we not infrequently discover optic neuritis or decreased bone conduction, alterations in reaction to high and low pitched tones and tests of the static labyrinth. As we broaden our researches we also increase the breadth of our concept of the pathology of this disease, for we now know that many so-called functional diseases, such as the psychoneuroses, have a definite pathology which in most cases is due either to syphilis or tuberculosis. The early institution of antisyphilitc treatment and the thoroughness with which it is carried out seems to bear no relation to the subsequent pathology of nervous syphilis, for experience has shown that tabes and other manifestations of syphilis of the nervous system develop quite as frequently among those who have had early and thorough treatment as among those who have had little or no treatment. This early involvement of the nervous system, although not generally recognized, has been alluded to by many observers. In 1880, Lang attributed the lassitude, headache and malaise incident to the secondary stage, to involvement of the meninges and nervous system. The earliest syphilitic involvement is in the blood vessels usually with an exudation of migratory cells into the vessel walls and perivascular spaces, and the subsequent pathology depends largely upon the reaction of the individual tissues in a given case. If the interstitial tissues are most susceptible, gummatous infiltration is the result and we have a diffuse gummy involvement of the meninges with deposit of fibrin and increase of fibroblasts and other elements of the fixed tissues, or a circumscribed infiltration of like character which later undergoes central necrosis and possibly cyst formation. If, on the other hand, the parenchymatous tissue shows the most reaction, the result is paresis or tabes.

Although the reactions of the nervous tissue to the invasion of the spirochete are as numerous and as varied as those of other structures, we may safely classify them into three general groups; namely, exudative, productive and destructive. The exudative form is typically exemplified in periarteritis with exudate into the perivascular space. The productive form is exemplified especially in endarteritis with its fibroblastic and fibrous increase and deposit of spirochetes and leucocytes upon the roughened surface of the intima, and if this goes on to complete occlusion or thrombosis we have a destruction of a remote area not peculiar to syphilis; namely, white softening, etc., which is the usual process after the blood supply of the parts has been cut off, or atheroma may result and hemorrhage take place with destruction of tissue, depending upon the size and location of vessel involved. Again the perivascular exudation may be so massive, as described by Alzheimer, as to infiltrate large areas of the surrounding parenchyma and these areas may coalesce, forming quite extensive patches of destruction and in all probability there is, in addition, a definite toxic substance elaborated by the spirochete

which is destructive to nervous tissue and possibly stimulates glial activity in a similar manner to that of cell destruction. Therefore, the destruction of the nervous tissue may take place in various ways and may be either direct or indirect. The gumma is an example of all three syphilitic pathological processes combined; namely. exudative, productive and destructive and it in turn is usually surrounded by an exudative mass. Paresis is characterized in the beginning by a lepto-meningitis which is infiltrative or exudative and by perivascular infiltration especially affecting the small vessels and rather diffusely distributed through the cortex but more intense on the periphery. Tabes is in the beginning a syringo-lepto-meningitis. Cerebro-spinal syphilis is essentially a vascular process; lepto-meningitis, which especially affects the nude or unprotected portions of the nerves in the basillar portion of the brain and cord and is accompanied, as a rule, by a gummy exudation, although it may be diffuse and closely resemble paresis, the plasma cell, with its mantle arrangement, being the chief differential element. All of the symptomatology of syphilis of the central nervous system, either paresis, tabes or cerebrospinal syphilis, may be present when the disease is still in the lepto-meningitic stage, and so far as I know, there is no absolute method of differentiating this exudative, non-destructive, curable stage from the later productive, destructive, incurable stage, the laboratory findings are frequently conflicting and very misleading and it is probable that several of these stages may occur synchronously. The cerebral-lepto-meningitis may cause any of the signs of paresis, except those of the most advanced stage, and the syringo-lepto-meningitis may produce all of the symptomatology of tabes and in so far as the condition is exudative, it is curable. In so far as it is productive, we are apt to have very decided remissions, either with or without treatment. In so far as the condition may be destructive, it is necessarily hopeless so far as any restoration of the destroyed tissue is concerned. Following this exudative process we have in paresis increase in glia and all forms of cell destruction, including Nissl's grave cell disease. Finally, as the areas of destruction increase in size and coalesce, a very distinct diffuse destruction of the brain is discernible; and in tabes, following the meningitic exudative stage, we have the parenchymatous degeneration of the posterior columns; and in postero-lateral syphilitic disease and diffuse syphilitic myelitis, we have similar parenchymatous destruction. But we must remember these are end stages which may be aptly likened to cavitation in pulmonary tuberculosis. We do not jump immediately from the exudative to the massive destructive stage. This massive condition is only arrived at after destruction cell by cell and fibre by fibre. In most cases of tabes, even though in a very advanced stage, some functioning fibres are easily demonstrable. This condition in tabes, however, cannot be likened to the picture we see in disseminated sclerosis, wherein numerous axons pass through the sclerosed area intact and the pathways to which they go are not destroyed. This brings up the question concerning tabes; is tabes dorsalis always posterior spinal sclerosis? The picture that we have had presented to us for these many years has been that of complete destruction of the posterior columns. I, personally, do not believe tabes dorsalis is originally posterior spinal sclerosis or destruction of the columns of Goll and Burdack, and the above conception, together with the numerous unquestionably authentic cases in which very great improvements or even symptomatic cures have been produced in both tabes and paresis, would tend to support my contention that there is not a destructive process in many cases, even after marked symptoms manifest themselves, for it is contrary to all our knowledge of physiology and pathology to believe that, once this destruction has taken place in the central nervous system, functioning of that part could ever be restored. This restoration can readily be explained, however, if we accept the condition as one of exudation which we know can be completely absorbed without any traces remaining and some of the remissions may even be explained by the gradual contraction which we know to take place in the productive form which would relieve the pressure upon surrounding parts.

Destruction of tissue of the central nervous system by syphilis may take place in one or all of several ways. First, by infiltration of migratory cells into the adjacent tissue; second, by thrombosis and atheroma producing destruction of remote areas by cutting off blood supply thereto; third, by hemorrhage and destruction by mechanical tearing of the brain tissue by the blood stream or by pressure due to subsequent clot and possible cyst formation; fourth, by pressure of a gumma, which acts as all neoplasms by direct and remote pressure, and besides is surrounded by an exudative area which increases the destructive zone; fifth, by influence of the toxines of the spirochete producing death of the cells; sixth, by the reaction of the glia to these toxines and destroyed cellular structures, proliferating and causing further destruction of the parenchyma.

In destructive syphilitic processes of the brain where the motor cortex is involved we have secondary degeneration of the motor pathway and in involvement of the various cerebral nuclei a secondary degeneration follows and similarly the anterior horn cells of the cord may be involved with a lower motor neuron degeneration as a sequence.

The pathology of hereditary syphilis can best be classified according to Gaucher's method, as secondary, in which there is a spirochetemia and is in all respects similar to secondary acquired syphilis and is always precocious. It responds to treatment in the same way; tertiary, in which the spirochetes are incysted or encapsulated and resembles our ideas of tertiary syphilis and is less amenable to treatment; quaternary, in which we have the residual effects of the spirochete in the form of destructive processes, not amenable to treatment and what Gaucher calls a quinternary form, which includes all of the gross anomalies and which are absolutely irresponsive to treatment.

The term cure is here intended to mean the disappearance of the inflammatory products and consequent symptomatology and not at all the complete destruction of the spirochete, for it is still an open question whether or not absolute sterilization is ever effected after syphilitic infection.

I am frequently asked in what percentage of persons affected by syphilis, the nervous system is involved? Knowing as we do the remarkable neurotropic tendency of the spirochete, I firmly believe that in 100 per cent. of cases of syphilis the nervous system is involved to a greater or less degree.

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THE EFFECTS OF TYPHOID FEVER ON THE NERVOUS SYSTEM.

By

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AFTER having treated 3,000 or more cases of typhoid fever and the sequelae, I find the sympathetic nervous system as an introduction to my subject a most interesting study. "It is so called from the opinion entertained that through it is produced a sympathy between the affections of distant organs." It is described in Wilson's Anatomy, English Edition, as consisting of a series of ganglia connected by intervening cords extending on each side of the vertebral column from the base of the skull to the coccyx. It may, however, be traced up into the head, where the ganglia which are in connection with the fifth nerve occupy the space between the cranial and facial bones. These two gangliated cords lie parallel to each other as far as the sacrum, upon which bone they converge, coming together there as a single ganglion (ganglion impar) located in front of the coccyx. The two cords are joined at their cephalic extremity through a small ganglion (the ganglion of Ribes) situated upon the anterior communicating artery. Moreover, the chains of the opposite sides communicate between these two extremities in several parts by means of the nervous cords that rise from them. The ganglia are somewhat less numerous than the vertebrae. Thus there are only three ganglia in the cervical region, twelve in the dorsal, four in the lumbar, five in the sacral, and one in the coccygeal.

The sympathetic nerve has various plexuses, named in accordance with their location, as, for instance, the top, or superficial cardiac plexus, the aortic plexus, and the epigastric plexus, the latter of which is one of the most important of all, as it supplies all the viscera in the abdominal cavity.

It will readily be called to the mind of every thoughtful physician, how, through the medium of the sympathetic nervous system, local disturbances in one particular point may rouse suffering at remote points, as under the head of reflex irritations we have a multiplicity of sorrows. Volumes have been written explaining the many and varied forms of the reflex irritations.

Many of the cases of the so-called nervous prostration and collapse are brought about directly, or indirectly, by the general effect of local irritation confined to limited territories, or, often multiple in their effect, are freely connected with the entire economy through the medium of the sympathetic nervous system.

Typhoid fever is caused by the introduction of a specific poison (bacillus typhosis). The disease is most likely derived from pre-existing cases, impure air, food and water, the latter by far the most prolific cause. The poison in most cases attacks the nervous system first. As its old name implies, it is a nervous fever as evidenced by the prodromal aches and pains, that of the head being severest, sometimes uncontrollably so. The nervous symptoms are never absent, although less evident in some cases than others, and not the same throughout the disease. Dull headache, mental languor, wakefulness, perverted state of the senses, while later there are restlessness, delirium (usually second week) somnolence (even coma) and jerking of the tendons. The optic nerve is usually quite sensitive, photophobia being a prominent symptom. Not infrequently we have the cardiac ganglion and nerve supply of the heart in general supercharged with the poison, causing a very rapid and weak heart, which greatly jeopardizes the chances

of recovery. The disturbances of the nervous system are secondary only to the abdominal symptoms. Then let us forget the idea we are dealing with a purely intestinal condition and awaken to the fact that we are combating a general infection which is producing degenerative changes in all of the more important and more active cells of the body, both muscle and nerve structure, which it is our duty to consider. The psychoses are the initial delirium, which may be a very early symptom, the febrile delirium which usually comes in the second or third week, which amounts to a confused condition of the mind, a melancholia, and the low muttering delirium so common in fatal typhoid. It may be a violent motor excitement. In fact, the disease may be ushered in by acute mania. The delirium is mostly at night. Not a wild delirium, but a confused mind with rambling thoughts, or it is a state of frenzy, which usually ends in coma. An early unremittent delirium is equally unpromising. Convulsions are more common in children, and may be a late symptom. If in adults, the case is most likely thrombosis or encephalitis. Convalescence may be disturbed by a delirium which is due to the exhausted condition. Mania and melancholia are often seen in the inherited neurotic type.

There are left distinct involvements of the brain, the cord, and the nerves, as well as certain functional affections which begin during the course of the fever or shortly after its subsidence. Autopsy records of lesions of the central nervous system, except meningitis, are rare. Meningitis (also rare) is a grave complication. In the exudate of the meningitis, typhoid bacilli are found as is, also, the case in lepto-meningitis. In obscure cases lumbar puncture or the Widal reaction may be resorted to in the absence of the usual typhoid symptoms. I have treated two such cases. A boy, four years old, at the end of the first week developed a slight pneumonia in the right lung, which cleared up promptly, to be followed by an attack in the left, slightly more severe. However, at the end of the third week the lungs were clear. A violent headache set in with the symptoms of a severe meningitis, finally resulting in a paralysis of the left side, which was total for three days. The recovery was gradual and complete.

Mary N., thirteen years old, had meningitis when six years old, leaving her a weak. irritable, and a very thin, slender child. After the second week of typhoid she developed a severe meningitis with maniacal delirium which was intense. This lasted about two weeks, when she died. Paralysis after typhoid is usually caused by neuritis which may be multiple or localized. It is often exceedingly painful. We may have a hyperesthesia following cold bathing, "tender toes" (possibly neuritis) which usually disappears in a week or two. I have treated such a case which seemed to have developed from *hot* applications to the feet during cold bathing. Another case related to me was so severe that brushing the toes with a feather was unbearable. Recovery was complete.

Friedlander, of Berlin, gives 80 per cent. of deaths in typhoid meningitis.

The hearing is often involved, and sometimes seriously so. It is thought by some that typhoid otitis media is the usual cause of meningitis, but it was not the case in the two cases reported. It is doubtful if middle ear disease is the cause, except in a minority of cases, that minority possibly small. A tuberculous predisposition in children is a fruitful source of typhoid meningitis, as is a predisposition to pneumonia.

I find often sore feet and calf muscles during convalescence, the sore feet continuing in many cases for some weeks after the patients are around.

Among the neuroses we find, epilepsy, hysteria, tabes, multiple scleroses and typhoid spine, described by Gibney. It is a severe pain in the back and legs provoked by movements. Friedlander also mentions infantile spinal paralysis, paralysis agitans, myotonia, chorea, tetany (which is only one of many symptoms) and various types of anesthesia, hyperesthesia, neuralgia, besides trophic and vasomotor neuroses. Palsy, which is usually paraplegic, with exception, begins gradually and disappears the same. It may be preceded by trembling movements, suggesting disseminated sclerosis.

Independently of the violence of the infection, the blood vessels of the central nervous system, as well as elsewhere, are liable to thrombosis, embolism and athroma. Hemiplegia is not an infrequent complication during convalescence.

It is probable that most of the hemiplegias and spinal paraplegias developed during and after the fever are the results of either thrombosis or embolism. Trephining is of doubtful benefit. If the nerve conters are gravely affected, bedsores will occur. Neuralgia and neuritis are most likely to be caused by either pressure or toxic causes. Except meningitis, hemiplegia is the most frequent brain complication. Either may occur early in the disease but most often it occurs in the second or third week, or later. Paraplegias are rare, but are more serious as to restoration of muscle power. Neuritis is the most frequent sequel and may involve individual nerves or may be a multiple neuritis. Multiple neuritis is a complication which I have seen in several cases. Three cases within as many years involving both upper and lower extremities. The lower extremities suffer more than the upper. Foot-drop is almost always present, and wrist-drop occasionally. I have seen several cases with less extensive involvement, but have never observed both lower extremities affected, without the presence of foot-drop. Recently I had a patient in whom the ulnar nerves were involved. There was no pain, but a tingling, numb sensation and the ulnar nerves (crazy bones) at the elbows were analgetic. Poliomyelitis may be confused with multiple neuritis. I have seen numerous cases of insanity brought to the hospitals with which I have been connected. This usually occurs during convalescence. If the insanity is free from hereditary taint, the prognosis is favorable, otherwise not. I had a patient in the St. Francis Hospital suffering from acute dementia, following typhoid. There was almost a total loss of mentality. He was wholly incompetent to come to the table for his meals without assistance. He was unable to carry on a conversation. It was even difficult to get a "yes" or "no" from him, and then only in an undertone, so that without close attention it would not be understood.

Neurasthenia is a common result of typhoid, and is possibly most often a fatigue neurosis.

No doubt that at the termination of typhoid the nervous system shows microscopical evidences of degeneration, which may readily account for many hysterical and neurasthenic symptoms.

Spondylitis typhosa of Gibney is possibly caused by a perispondylitis. It resembles Pott's disease, but without the deformity, and usually makes a good recovery.

Taylor, Cutler and Lord (*Boston Medical Journal*) Fussell, Osler, New, Comet, Komtzer, Quincke, Lovett, Wirthington, Painter, Kuhn, Study, Neisser, Huz, Tinkerhaus, and Baily, have contributed much on these subjects.

Diller (*American Medicine*) reported a case of meningo-myelitis during convalescence. McClintoc reports a case of brain abscess due to bacillus typhosus (*American Medical Science*, 1892). Dabond discusses meningeal forms under three heads: (1) Usual symptom of typhoid with associated meningeal signs. (2) Meningeal symptoms dominate the whole clinical picture, but is likely to be mistaken for uremia. (3) Is a clinical picture of a direct cerebrospinal infection.

Lepine reports a case of typhoid myelitis. The lesions found at the necropsy were acute poliomyelitis of the lumbrosacral region with central myelitis and lesions of the white matter and lepto-meningitis.

Sylvester reports a case of typhoid with meningitis in an infant terminating in recovery.

Ginzburg reports a case (*Med. Rec.*, 1902) of paralysis of the pharynx and probably of the esophagus, with recovery.

Black, Pueblo, and Gordian, give interesting cases of meningitis.

I saw, with Dr. Frederick, of Pittsburgh, the following case: Vincent, 12 years old, was seen on the 19th of March, 1903, with all the symptoms of typhoid fully

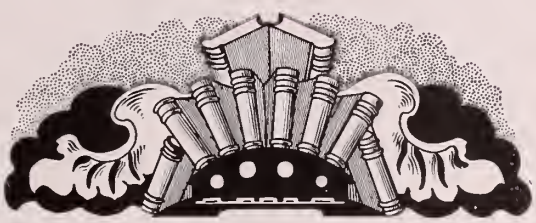
developed, having had prodrome for two weeks previous. Had always been healthy. Father, mother, brothers and sisters all living, but the mother's side is tubercular. When he was brought to the office of the family physician he had a temperature of 103, and during his illness it ran from 104 to 106. An ice cap was constantly applied to the head, and frequent cold sponging resorted to. He had marked delirium and all the symptoms which accompany a severe typhoid. The temperature returned to normal about the twenty-first day, and the third day following the nurse stated that he could not swallow his medicine as he should.

On the sixth day, after thorough examination, complete paralysis of the vocal cords and muscles of deglutition was found, very similar to Ginzburg's case just mentioned. Rectal feeding was resorted to, followed by hypodermic injections of strychnia. This method of feeding had to be abandoned, as the rectum was too irritable to retain it. He was then fed by nasal tube. His medicine was administered in the same manner, and consisted mainly of strychnia given freely (strychnia or electricity is usually inadvisable in acute neuritis). On the following Thursday (twelfth day), he was able to swallow a portion of a teaspoonful of water by great effort, and from this on he gradually improved, but his ability to phonate was much slower, and when he would try to speak it was in a long drawl. It was four weeks before he could speak naturally. During the paralysis his left pupil was very widely dilated and the orbit swollen. When convalescing he developed a non-specific urethritis, passing blood clots and strings of mucus. This always preceded the urine. The condition slowly subsided under the use of Spirits Aetheris Nitrosi.

From this on he made a rapid and complete recovery. It was during this latter condition or stage of paralysis that I saw him with Dr. Frederick.

Many other forms of neurotic tendencies are mentioned in the literature extant, but are not of sufficient frequency to interest the general practitioner.

825 Park Building.



THE NEED OF MENTAL EFFICIENCY.

By

JAMES M. KENISTON, M. D., Harvard, Portland, Maine.

SOME things are so evident—so clearly defined—that it seems almost unnecessary, even absurd, to exploit them. Why talk about what every person of average mental capacity knows—his duty to himself, his family, his town, his country, the entire world, and the Creator? Does he not know the difference between right and wrong, and has he not heard or read the parable of the talents? Yet there still exist evil, and unnecessary diseases, and indifference, and inefficiency. Ovid put into imperishable verse what his predecessors knew by bitter experience, and all recognize:

> "I see the right, and I approve it too;
> Condemn the wrong, and yet the wrong pursue."

We must, therefore, bear in mind that there are two kinds of efficiency—one making for righteousness, and the other for evil. In the light of the present great war, many of us are inclined to believe that evil from the very beginning has prevailed over good, and never more so than now. Naturally an optimst, I often find myself wishing certain nations could be wiped off the face of the earth, or at least made incommunicado for three generations, to overcome the several degenerations which have obsessed a whole people. And strangely enough, the ministers of the gospel of peace have out-Heroded Herod in advocating a variety of hatreds and their necessary results which would make Satan hide his head in shame. If ever reprisals are justifiable, they are warranted now, if we would uphold the banner of efficiency.

But one should remember that hatred diminishes true efficiency.

In order to establish and develop efficiency to the highest degree, we must "always be on our job." Recall Isaiah's words, "For precept must be on precept; precept upon precept; line upon line; line upon line; here a little and there a little." (Good authority for *repetitions.*) And Professor Lounsbury has called attention to "the infinite capacity of the human brain to withstand the introduction of knowledge;" while Professor Erskine has inculcated "the moral obligation to be intelligent," and President Hibben asserts that, "there are many persons who do not think at all, and yet manage to exist. Their lives are merely a series of sense-impressions, which serve to stimulate certain habitual activities within a confined range of daily routine. * * * Education prepares for one thing and for one thing only—the ability to *think.*"

Do we not—many of us at least—err in thinking of education as finished when we leave school, and start on our career? Really it has just begun, and it should never stop as long as life lasts. Let me quote further from Hibben: "The man *most efficient* in his business or profession is the one who possesses some reserve power over and above that which he may be called upon to expend upon the actual labors of his specialty. A man always needs more than he uses. He who can do but one thing, never does it supremely well. An *excess of power* is an essential and significant factor in *efficiency.* * * * It is in the reserve force or power which we insensibly discern back of a man's personality that our confidence in the lawyer, the doctor, the minister, or the engineer is grounded." (From "A Defense of Prejudice.")

Neither arguments nor a list of all the "Who's Whos" are needed to demonstrate our thesis that every man should know and utilize properly the powers he naturally

possesses, and invest them at compound interest. But he should equally realize his *limitations*, if he would always direct his powers aright, with the minimum of waste, and the maximum of efficiency. Paul said: "So fight I, not as one beating the air"—perhaps a forecast of the modern strike outs in base ball.

Moreover, while journals like the ALIENIST AND NEUROLOGIST, devote their productions and researches mainly to certain absolutely essential fields of information, these must be classified and condensed in a clear and untechnical way—not an easy thing to do, so that they may eventually be "carried over" to the laity, if they are to be comprehended and adopted. Unless we can impart the laws and conditions which control mental health and efficiency in a simple and clear manner, much of our time will be wasted. We must avoid the "bungling" and "muddling" which have been too prevalent among the allies who are striving for safety to democracy, as Wilson and Lloyd George now realize. While we may get there eventually, think of the enormous waste of lives and money and power and efficiency which might have been prevented by *proper* and *continuous co-ordination*. In times like the present, we really need one controlling head—and evolution and education will eventually find one. Perhaps it will be Tolstoi's "man from the north"—say of America? There have been too many bureaus and commissions and "circumlocution offices"; too much wrangling and too little efficient co-operation. Witness, for instance, the friction and delay for months in regard to supplying an adequate number of ships. Waste of time is as bad as waste of food or fuel, and is due to a lack or utilization, of efficiency. But we are gradually being trained intensively, and are beginning to try to avoid the difficulties which confronted and accompanied Washington, and Lincoln, and McKinley. One would almost believe that this nation knew little or nothing of history. When contractors furnished the armies in Italy with shoddy shoes, Napoleon lined them up against a wall and had them shot. One such lesson was enough.

In urging the need of mental efficiency, there are certain features which must be emphasized. One of these is inertia—the difficulty in maintaining a continuous pressure. Of course, continued high tension is not only difficult but unwise, since a real and effective relaxation is an essential corollary to any and all activities. Hence we must resort to "drives," just as we have done for "Liberty Bonds" and the "Red Cross," and the Y. M. C. A. and the Knights of Columbus. And to my mind one of our greatest assets is the employment of the boys and girls throughout our land in the varied activities demanded in the present crisis. There could be no more efficient form of practical education, since it has aroused an interest in social service, which will create a desirable *habit*, and at the same time instil more or less *knowledge of mental hygiene*.

We must then strive to dispel inertia and its twin, indifference, if we wish to promote to the uttermost a universal, genuine interest in mental efficiency. Let us consider briefly what this means to each of us. It is a trite truism to assert that competent physicians must lead in this work, in which it is natural that alienists and neurologists should be in the van. Now my long experience, verified by evidence from many sources, has shown that one of the most difficult and disheartening problems confronting us is to interest the medical profession at large—I refer to the so-called general practitioner and all specialists in lines distinct from psychiatry—in the vital problem of mental disorders. How seldom do we see papers on it in our state, county and local societies? How many times I have been told by doctors that they could not understand how we could devote our lives to the care of the insane? "I should go crazy in three months." And if it is so difficult to interest the medical profession, how much more so to arouse the laity, except in cases where some relative is afflicted.

Let us assume that every doctor will enlist in the crusade for the prevention of mental diseases and the promotion of mental health and efficiency. Each specialist contributing his part in seeing that every part of the *body* is in the best possible condition, will thereby furnish the basic supports of a sound mind. The only difference now

would be that all examinations, all researches, all results, would be tabulated even better than what the national and state census achieve. No one feature would be *duplicated*. The first step in regenerating humanity at large should be the correct registration of every child from birth to manhood, and neglect of this should be considered and treated as a crime. This great and important task should be under the jurisdiction of Eugenic Societies like the wondrously fruitful organization at Cold Spring Harbor, N. Y. Again allow me to quote: "The functions of this office are:

"1. To serve eugenical interests in the capacity of repository and clearing house.
"2. To build up an analytical index of the inborn traits of American families.
"3. To train field workers to gather data of eugenical import.
"4. To maintain a field force actually engaged in gathering such data.
"5. To co-operate with other institutions and with persons concerned with eugenical study.
"6. To investigate the manner of the inheritance of specific human traits.
"7. To investigate other eugenical factors, such as male selection, differential fecundity, differential survival, and differential migration.
"8. To advise concerning the eugenical fitness of proposed marriages.
"9. To publish results of researches."

Scheme.

A. Anthropometric measurements.
B. Mental and temperamental traits:—
1. Relating essentially to the intelligence, capacity for acquiring knowledge, judgment, etc.
2. Relating essentially to the output of energy.
3. Relating essentially to the subject's estimate of himself.
4. Adaptability toward the environment.
5. Mood.
6. Instinctive demands, traits more or less clearly related to the sexual instinct.
7. General interests.
8. Pathological traits.

Similar societies should be established in every district in the country, the spheres being small enough to allow easy access to every inhabitant. With national registration, and a complete chain of eugenic societies, in due season every person in this land would be *thoroughly* and *scientifically indexed*, thus affording all necessary data for research or to speed the mobilization of any class needed in any given crisis. What a Godsend such an index would have been in the present war!

Parallel with the above come the Societies for Mental Hygiene, organized "to work for the conservation of mental health; for the prevention of nervous and mental disorders and mental deficiency; and for improvement in the care and treatment of those suffering from any of these disorders. Some of the methods adopted are educational campaigns and exhibits, free clinics, surveys, social service, legislation, and thorough co-operation with the many agencies whose work touches at one point or another the field of mental hygiene. Those who may be benefited are the insane; the mentally defective or feebleminded, the inebriate, the epileptic, and that large group of people who through mental causes are unable to so adjust themselves to their environment as to live happy and efficient lives." There should be at least one such society in every State, with sufficient branches to serve any given community promptly.

Akin to the above, and covering largely the same lines, are the Psychopathic Hospitals, and wards in general hospitals, which each year "attract an increasing number of both house and out-patients. In the latter class the medical psychological and social examiners have to deal with questions of feeblemindedness and mental defects—an

increasing number of backward children from schools; and cases of all forms and degrees of mental disturbances."

As for hospitals devoted exclusively to the care and treatment of the insane, the public should know that for generations they have been urging *early treatment*, first aid, constant progress, and the adoption of every method which would tend towards the recovery, or improvement, of the patients, or, if either of these results are impossible, the mitigation of their sufferings, surrounding them with all the accessories which will make their existence as home-like as possible.

The annual reports of these hospitals not only contain invaluable statistics, carefully and appropriately tabulated, but the needs and aims and comments are delineated by the superintendents so clearly that they have a distinct literary value, as well as a scientific importance and an educational influence. But too few even of our legislators ever read them carefully, to their and our loss. I have read hundreds of them, greatly to my edification and interest. To speak only of the dead, one can find great values in the reports of men like Earl, Shew, Godding, Kirkbride, and Butler. If some central organization could make a psychiatrical digest of all hospital reports at semi-annual intervals, there would be a large demand for them. It took me weeks to ascertain the average increase of the alcoholic psychoses, involving the study of over two hundred reports here and abroad. And it is pertinent to add that my own mental efficiency would be greatly enhanced if there was a general adoption of a working classification of mental diseases.

There are many other valuable and serviceable organizations which make for mental and moral, as well as physical, soundness which merit the greatest commendation and should receive unanimous support, both moral and financial. To avoid censure and display impartiality, let me enumerate *some* of them in alphabetical order—boys' clubs, Boy Scouts, Campfire Girls, churches, clubs, exhibits, individual efforts, Girls' Friendly Societies, King's Daughters, labor organizations, lectures, open forums, schools and colleges, some secret societies, like the Masons, Odd Fellows, and Knights of Columbus, etc., Y. M. C. A., Y. W. C. A., and Y. M. H. A. This list, hastily prepared, is by no means complete One might justly add many of the large department stores, for instance, which provide in so many ways for the welfare and health of their employees; and also commend the great work performed by the Army and Navy departments. The point is to associate all those tremendous forces which make for mental efficiency—a sound mind in a sound body, not merely in one country but throughout the world, thus rendering intelligence not only a "moral obligation," but an incentive to a real righteousness which will be known by its works—the only sure and accurate index of conduct. It seems to me that the doctrine of "peace on earth and good-will to man," if universally exemplified, would make a satisfactory standard. Like Silas Wegg, to "drop into poetry"—not as an "extra," however—Montaigne's noble version of Persius seems to depict a line of conduct which would certainly ensure mental efficiency.

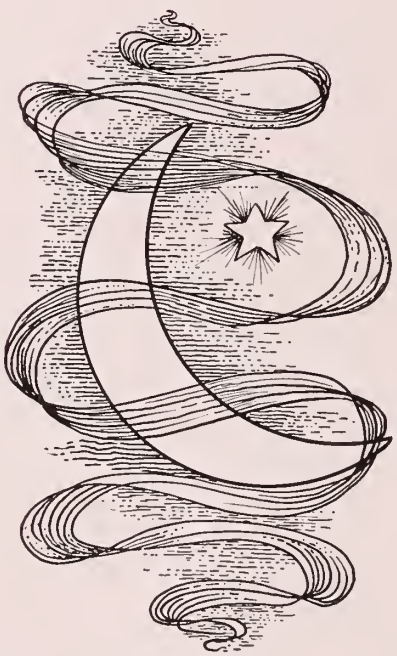
"Think what we are, and for what end designed;
How we may best thro' life's long mazes wind;
What we should wish for—how we may discern
The bounds of wealth, and its true uses learn;
How fix the portion which we ought to give
To friends, relations, country—how to live
As fits our station; and how best pursue
What God has placed us in this world to do."

We will assume that all the scientific and humanitarian organizations have united in the desirable work or raising mental, which connotes moral, efficiency to the highest degree possible in every living human being, and are affiliated and co-ordinated in a systematic unison. Then the next step will naturally be to utilize the daily and weekly

newspapers and the magazines to systematically and regularly devote as much space as possible to publishing articles which will in a clear and simple diction, devoid of abstruse and, to the public, incomprehended technicalities, convey necessary instruction in regard to everything which concerns mental health and disease.

There are so many great men in this line who are thoroughly competent to unite and vitalize all the means above noted, and so ready to spare some of their valuable time, that it would be invidious to catalogue them. Indeed, it is not necessary, as their names are well known. In conversing and corresponding with some of my friends on this subject, several have asserted that in my optimistic enthusiasm I am prophesying the millennium, or a Golden Age. So be it—it would be agreeable to me and to the entire world as soon as it became acclimated.

208 Eastern Promenade.



THE SCIENTIFIC BUT PRACTICAL DIAGNOSIS AND TREATMENT OF OUR NEUROTICS*.

By

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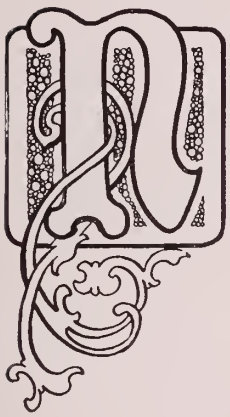

EUROTICS are born; neurotics are made; and in this twentieth century rush for existence, which means standing in a community, those that are not born such, very soon become neurotics.

It is a generally accepted fact that the brain and nerves control and operate every function at all times, asleep, awake, sick or well. Every action, every word or deed calls for energy, energy must be supplied from but one source, a central nervous system.

We are taught in elementary physiology that muscles, bone and blood have a specific nutrition, a food so to speak; we have also well defined tests to show whether this is present in normal amounts. The same may be said of the nervous system. But the nutrition of the nervous system goes a step further than nutrition of other parts. Here a reserve is created for times of emergency. That such a condition is supposed to exist is most aptly described by Prof. Shaw in his treatise on nervous diseases, when he speaks of neurasthenia, or nerve-tire. He says: "This inherited unstable state of the nervous system (neurasthenia can be inherited or acquired) depends evidently upon some defect in the power of the neurones to assimilate and store up nutrition in force, in sufficient quantities, and with sufficient rapidity to carry on fully and easily the work of life."

We fully realize, and accept as a proven fact, hemoglobin represents the quality of the blood; urea, muscular metabolism, so to speak, but it was not until 1908, '09, '10, *New York Medical Record*, that any means was given us to estimate nervous metabolism. In those articles, which the writer published under the title, "The Phosphatic Index," I claimed that the alkaline phosphates found in the urine showed nervous metabolism. In other words, they represent the end products, by metabolism, of lecithin, nuclein and phosphorus, the nutrition or food of the nervous system.

Phosphorus is an important constituent of the nervous system, and a relative increase of phosphoric acid is due to an increased metabolism of the nervous system.

Phosphoric acid occurs in the urine as acid sodium phosphate and acid calcium, and magnesium phosphate to the amount of about two grams daily. It is more abundant after an animal than a vegetable diet. The amount increases after a midday meal until evening, and falls during the night until the next day at noon. It is partly derived from the alkaline and earthly phosphates of the food and partly as a decomposition of lecithin and nuclein. In certain fevers, and in organic diseases of the nervous system or bones, and in diabetes, it is increased, while during pregnancy and after the use of alcohol and ether, it is diminished.

In considering this subject, we do not refer to phosphates appearing in freshly passed urine, not to the earthy phosphates, but in speaking of the phosphates, we refer only to the alkaline phosphates which are precipitated only by an alkaline solution. (The earthy phosphates are in such small quantities that they may be ignored.)

*Presented by special request before the McKean County Medical Society, at Bradford, Pennsylvania.

We have an increase of phosphates excreted when there is a hyperacidity or irritability of the nerve cells, and in this state, if carried to an extreme degree, it will in time deplete the reserve store of nerve nutriment and cause a decrease in phosphates excreted, showing itself in a relative amount of systemic prostration, or what may be called neurasthenia. This is well known in cases of nervous excitement continuing for weeks or days in subjects taking little nourishment, where the phosphates are greatly increased, showing the reserve store is called upon. Nerve sedatives will check this excessive metabolism of lecithin and nuclein, as shown by decreased phosphatic elimination.

Phosphates in the urine show a decrease when there is no surplus of phosphorus, nuclein and lecithin for the nervous system. Even with the increased irritability there is a decrease, and the crystals themselves are altered in size and shape. So we may have the following stages or types:

(1) Normal output of phosphates with normal size and shape of crystals, showing the metabolism of the nervous system in health and normal conditions.

(2) Excessive output of phosphates as will be shown by a high phosphatic index, an increased metabolism of the nervous system due to hypersensibility, or irritability of the nerve cells; the crystals are generally small in size.

(3) Decreased output of phosphates shown by a low index, a condition due to a lack of nuclein and lecithin reserve.

(4) We may also have a normal amount of phosphates, but the crystals are light in weight though normal in size, showing an anemic condition, so to speak, of the nerve cells.

Amorphous crystals are found at times, and, if continuous, show a degeneration of nerve tissue, eliminating the use of alcohol during the previous twenty-four to thirty-six hours.

The size and weight of the precipitate are important factors. It may fall to a normal index, but in appearance the sediment is fluffy, light in color, and easily moved about on agitation of the phosphatometer. When normal, they settle like fine sand, and agitation of the tube does not disturb them. In the former condition, or where they will not sink or partially so, being fluffy, they must be considered as deficient.

Phosphates precipitated by the alkaline solution appear fern-shaped, but the crystals vary in size. The usual size is about five-eighths of an inch in diameter, but according to the condition of the nervous system, they may be only one-eighth of an inch relatively when viewed with one-half-inch objective. The size of the crystals is quite important. In those cases where there is an excessive amount, they may appear very small, and these are the cases which show increased nervous excitement. They are small where there has been a continued drain on the residual reserve of nuclein, lecithin and phosphorus.

The food we eat will furnish just a certain quantity, a quantity sufficient for all reasonable requirements, but who uses reason to-day?

The daily supply not being sufficient, the reserve must be drawn upon, if this is continued, it will be only a matter of time until depletion is evident, and as to degree, we have a similar degree of neurasthenia, a condition that may show itself in any or all parts of the human system.

Conditions of the nervous system may be grouped under two broad headings; psychoses and psychoneuroses.

Of the first, we find hysteria, neurasthenia, and, of course, diseases of the mind, the insanities. In the second class, we find neuritis and neuralgia, although at times the latter may be due to central conditions.

Both hysteria and neurasthenia are very vague terms and may cover a multitude of mistaken diagnoses, yet it is these same conditions that give rise to the remark, "America is a nation of neurotics." They cover fully 80 per cent. of all the ailments

of to-day and have heretofore been supposed to have been of a purely functional nature, that is, there is no pathological change present.

This we know to be a mistake. True it is, the cause is not visible, neither can it be elicited by questioning; it is in the brain cells and can only be ascertained by an estimation of the amount of alkaline phosphates in the urine; these show nervous metabolism. This is easily and quickly done by the phosphatometer, taking but ten minutes.

The modus operandi for ascertaining the phosphatic index is so well known but little may be said. (The phosphatometer is graduated for urine and solution, also shows minus and plus. After adding solution to urine, invert phosphatometer several times to thoroughly mix contents.) One should always use the second urine passed in the morning, reading at the end of ten minutes. When the precipitate does not sink, sinks but part way and is light and fluffy, or goes below N. P., it must be considered as minus. Using the blood as an analogy: when the precipitate does not sink to N. P. solid, and is light and fluffy, it signifies a want of nerve-cell nutrition, the same as the haemometer will show a want of hemoglobin. When it goes below N. P., it shows nerve-cell nutrition of the reserve normal in quantity, and the percentage below N. P. represents the extent to which the reserve has become depleted, that is, a normal hemoglobin, but red cells diminished. In either one of these conditions, a practically normal blood pressure will be found or one below normal.

Such a condition, shows either nerve-cell starvation or a depletion of the reserve, and no matter what the case is, the condition will remain stationary, resolution will be retarded and but little, if any, results ensue, until nerve nourishment is supplied.

A plus index, solid above N. P., indicates excessive metabolism, the reserve is being abnormally drawn upon, and is due to nerve-cell irritation. This condition, especially when the precipitate falls rapidly, is always found in high blood pressure—the vessels are in a state of contraction. There the condition is acute, valerian or the bromides are indicated; if chronic, as in cases of high pressure, the bromide of gold and arsenic.

Although the above may be considered more or less theory, empirical, the following article on the "Phosphatic Index and Diseases of the Eye," by Dr. J. C. Clemesha, M. R. C. S., London, to a great extent brings us face to face with facts. He says: "We cannot afford to abstain from, or discard a useful method until the precise explanation is revealed to us, and we must not forget that empiricism has often anticipated scientific medicine." Further on in his article, he says: "I present to you this article, knowing that the scientific points are not what they should be, but the scientific points have more than borne out the procedure about to be given."

Briefly three cases will be reported to show how quickly a differential diagnosis can be made, and the results obtained.

Mrs. G., age 45, had suffered quite excruciating pain, off and on, for three years, from brachial neuritis; almost constant treatment without beneficial result. Seen in consultation, examination showed no pathological condition from the urine; no excess of uric acid; phosphatic index 150 per cent. plus; blood pressure, 190. Bromide of gold and arsenic was advised, 10 drops three times daily in water, increased one drop daily to twenty. In ten days to two weeks, there was practically no pain, index at this time about 10 per cent. plus; blood pressure, 140. There has been no return of pain in two years.

Dr. J., brachial neuritis of three months' standing, constant treatment by aspirin, etc., but no improvement. Careful examination of the urine showed no pathological condition; no excess of uric acid; P. I. 65 per cent. minus; blood pressure, 115. A mixture of nux vomica, cannabis indica and free phosphorus was ordered.*

*This mixture, known as Comp. Phos. Tonic, is used very extensively by hospitals and sanitariums in New York State, the dose being 30 drops in milk half an hour after meals.

In three days there was no pain whatever, in three weeks the index was 10 per cent. minus, the patient had gained four pounds in weight, and there has been no return in three years.

Dr. G. W., Buffalo, diagnosis brachial neuritis of two months' duration; all methods of internal treatment with no improvement, could scarcely use his arm; pain very marked at night. Careful examination of urine disclosed no excess of uric acid, nor other pathological findings; P. I. about N. P. (normal precipitate, solid). Opinion was given that the condition was not due to uric acid excess or nerve condition, *per se*, but probably to pressure on the nerve. Having heard innumerable good results from the afore mentioned mixture, the doctor insisted on using it, which he did for at least two weeks. There was absolutely no improvement. Some time later, a surgeon found pressure which was relieved and pain ceased almost at once.

Summing up the foregoing conclusions, it may be stated with a fair amount of accuracy, that about 90 per cent. of what are commonly known as the functional neuroses, *i. e.*, hysteria, neurasthenia, neuritis, myalgias, etc., are due to a want of nerve nutrition—that is, the nerve-cells are calling for food and pain is their word for hunger. About 5 per cent. are due to nerve-cell irritability, as is shown by a high index; three per cent. are acute and call for sedatives such as valerian and the bromides, and when chronic, especially where there is high blood pressure, the bromide of gold and arsenic is indicated, and 5 per cent have other causes, as injury to a nerve trunk, etc.

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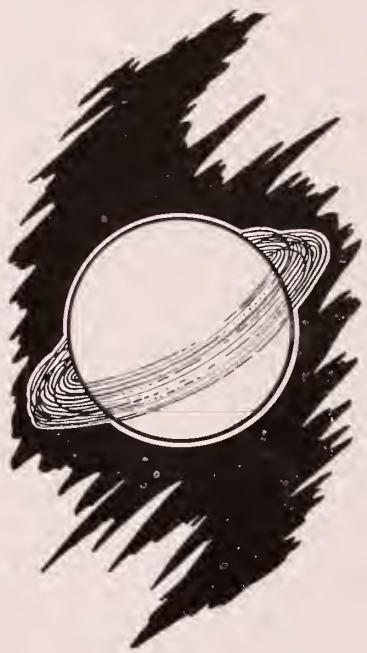

DEGENERACY.

By

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THE TERM degeneracy, now so diversely employed, is without uniformity of meaning or restriction of definition. In the present discussion, the term will be used as descriptive, in a general way, of the mental and physical conditions obtained in the development of various characteristics, but coming under the general heading, "The Defective Classes of Society," or "The Dependent Classes." This includes all those who, by reason of mental defect, are incapable of self support. The intellectual status of such persons is below the common standard of society in which they are classified. They represent the constitutionally insane and the constitutionally immoral or criminal.

In the constitutionally insane reference is had to the great number of insane whose mental obliquity is manifested by a state of degeneracy; this state resides in the constitutionally defective from birth. It may remain long dormant or late in its manifestation.

In the constitutionally immoral reference is had to that large class of individuals who are incapable, in their weakened mental condition, to cope with the more enlightened and complex element of society. They, therefore, drift into the immoral, licentious and lascivious element of society. This dejected class look with suspicion on the more intelligent and consider all restrictive laws as unjust and oppressive.

This defective class has always furnished serious problems for the more fortunate of mankind. Such problems have become more interesting as civilization has advanced —compelling modifications of ancestral notions and effecting reforms in every direction; religious, social and political. In fact, the kindly feeling for this class has advanced with the progress of time.

The study of the nutrimentive process of the neurons, or the metabolism—either anabolic or catabolic—is a most delicate and intricate process. The neurons, like all other cells of the body, take up the food into their substance, transform it, gradually building them up through a series of synthetic processes, into a highly complex chemical compound. The neurons, at the same time, undergo a series of decomposing reactions which terminate in a more or less simple compound.

This process is recognized as the excretory product of the neurons, or catabolic metabolism. It is the taking up of this food which gives rise to the vital manifestation of the neurons' chemical compounds, which come into existence, in some of these neurons at least, in a degree of complexity scarcely approached anywhere else on this planet, and before the nature of which the organic chemist stands utterly baffled. It is in the nervous system, of all parts of the body, that the complexity and intricacy is most in evidence. It is here that we find the extreme instability of the living subsance, in which the slightest influence will bring about transformations and alterations in the cells. What infinitesimally small active force, acting in a ray of light, calls forth the most powerful effect on the retina and, in turn, on the brain! How entirely minute are the active forces of the neurons! What wonderfully minute quantities of certain poisons suffice to destroy a large animal!

The dependency of the neurons on a constant supply of nutrition is shown by certain disturbance of the circulation when the nutrition falls below a certain minimum

—the mind becomes cloudy and may even vanish. In fainting we have a proof that without an adequate supply of oxygenated blood complete consciousness cannot be maintained for even a second.

Some of the most potent causes of degeneracy are fermented alcohol, opium, tobacco, arsenic, tyrotoxicon, poisoned food, syphilis, tuberculosis, lasciviousness and fast living. These may be considered as precipitating causes or as sequences, rather than as an antecedent to the condition implied. Some of these causes enter into the fertilization of the ovule or the ovule may be debauched by some of these evil influences while developing in utero. It is at this time that the physiological equilibrium is destroyed and a vicious degeneracy is already established. This can, perhaps, be better illustrated by the more simple laws in the vegetable kingdom. What is "bred in the bone" is well illustrated by the art of grafting—the graft, or scion, will always bear the same fruit as the tree from which it was taken. An apple tree with inferior fruit can, by grafting, be made to bear, not only the most luscious fruit, but an endless variety of fruit that will ripen at different times in the season of the year. This clearly demonstrates that it is not the sap, roots, or the tree itself that determines the kind or quality of fruit, but the union which created that scion in the beginning of that fruit by cross-breeding. *It is the kind of seed that is sown and the fertile soil in which it lodges that determines the quality of fruit that will be produced.*

What has been accomplished in the vegetable kingdom has been equally accomplished in the lower animals. The horse is bred to a certain definite accomplishment. We have the draft horse, the trotting horse, the coach horse. Cattle are bred for milk and beef. The Holstein and Guernsey, noted for the quantity of milk they give; the Shorthorn and Devon for the beef they produce. The "Texas steer" is a product of self preservation. The difference between the Texas steer and the thoroughbred cattle is the result of the ingenuity of man. Luther Burbank and others are accomplishing wonders in the vegetable kingdom, and in the lower animals, also, man is improving the efficiency for which it is intended.

The question may be asked, if man is exercising the same ingenuity and care in the realm of eugenics, in his own kind. In too many instances the human race is begotten like the Texas steer, in that haphazard way, without any eugenics entering into the birth of the child. Nor is the proper effort put forth to improve the child in its mental and physical aspects while developing from babyhood, through adolescence, to maturity.

The alarming condition with which eugenists are at present concerned is the inheritance of weakened mentality. The prevalence of feeblemindedness is becoming alarming. The prolific procreation of the feebleminded is the cause of the rapid increase of this element in our human stock.

One of the most convincing family histories, illustrating what may result, through heredity, is detailed by Goddard in his story of the Callikak family: At the beginning of the Revolutionary War, a young man named Martin Callikak had a son by a nameless, feebleminded girl, from whom there has descended in a direct line four hundred and eighty individuals. One hundred and forty-three of these are known to have been feebleminded; thirty-six have been illegitimate; thirty-three led immoral lives; twenty-four were alcoholics; three were epileptics; eighty-two died in infancy; three were criminals and eight kept houses of ill repute.

After the war Martin Callikak married a woman of good stock. From this union has come, in direct lineage, four hundred and ninety-six individuals, among whom only two were alcoholics and one known to be immoral. These legitimate children, of his last wife, have been doctors, lawyers, judges, educators, traders, landholders; in short, respectable citizens; men and women prominent in every phase of life. These families have lived on the same soil and under the same general environment.

It may be asked: "What union and what kind of development best befits parenthood?" It is the nervous system that gives man supremacy over all other animals. In muscular strength and endurance man is surpassed by many of the lower animals, yet by his intellect and will power man is able to subdue any of the lower animals, even where the animal's muscular strength is far superior to that of man.

Every individual should be developed to the highest possible degree, mentally, morally and physically. A child that is not an improvement over the parents is a "slacker" to the human stock. It is by strengthening the individual that we can hope to improve the human race.

Hygiene, as applied to the individual, strives to conserve the life of all individuals even to the most wretched, but the hygiene of the race has for its ultimate aim the elimination of the weak in order to improve the whole human race.

In the rural districts of New York, statistics show, the teeth of children are more defective, and they show a lower state of vitality than do the children in the greatly congested districts of New York City. (This is the reverse of what it was twenty years ago.) This is without doubt due to the neglect of proper hygienic instructions to these children of the rural districts where, although they have the best light and air, this neglect greatly overshadows their natural hygienic surroundings. The teeth are a true index to the health of the child. The child with defective teeth has a fair start on the road to degeneracy. Without the first requisite of good health and development how can their bodies be properly nourished!

Realizing how delicate and how important it is that the neurons receive their constant supply of nourishment, how the mind may become dazed and even vanish if the supply of nutriment fall below a certain minimum, and that it is but a step further to substitute for this lack of nourishment some of the poisons mentioned as causes, and if these poisons are continued long enough to impair the neurons, that they become permanently diseased, a state of degeneracy has been established. This degeneracy does not stop here, but is continued on into the generations; therefore, the plea for greater use of our weapons, hygiene and eugenics, against the increase in degeneracy cannot be too strongly put forth.

The alcoholic problem is perhaps one of the greatest factors in the production of degeneracy. It is shown that there are over a million persons in this country using spirits, either in moderation or in excess. There are at least fifty or sixty thousand direct deaths from this cause yearly and many thousands whose deaths are due indirectly to this same cause.

The neurons should be bathed in the richest kind of pabulum especially while the child is growing into manhood or womanhood. It is at this time that the child is establishing its future, the kind of an individual that he or she will become. It is the feeding of the lower animals that has brought them up to the high standard of efficiency.

If the doctor were called into the home to prescribe the diet, the exercise, the clothing, the atmosphere, in fact, to look after the hygiene of the individuals of the family, it would be better than trying to restore them to health after incorrect living has produced the sickness.

If the neurons were nourished, to the highest efficiency, it would largely prevent the craving for spirits and narcotics.

Our marriage laws should so regulate marriage as to prevent the extreme degenerates from procreating their kind. If the feebleminded girl in the Callikak family had been segregated, what a lineage of degenerates would have been averted. The Mendel law is sufficient to warn us in taking such extreme measures. By the use of the Coolidge X-ray tube the production of atrophic changes in the human ovary is one of the safest and surest means of destroying the ovarian function. This destruction

can be accomplished in any female irrespective of age. The amount of exposure to the X-ray varies according to the age, decreasing as she reaches the menopause. The permanancy of the induced menopause varies according to the age. It is generally permanent after thirty years. It will last two or three years previous to that age. This simple method of practically unsexing the female might well be used to prevent the procreation of the extreme feebleminded.

If all the ingenuity that man could muster were used to *prevent* the *degenerate* from "multiplying and replenishing the earth" with their kind, *if eugenics entered into the evolution of the human race*, I am confident that man in his mental, moral and physical aspects would be greatly improved in the future generations.

EDITORIALS.

Conducted by

MARC RAY HUGHES, M. D., DAVID S. BOOTH, M. D.,
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THE BROMIDES.

Many are the warnings that have been written against the use of the bromides, much undeserved abuse heaped upon them and great injustice thereby done to suffering thousands who might have been relieved—aye, cured—with a great saving of time and expense, by their early and proper use.

One author, in discussing sedatives in general, writes: "but really they do harm except when absolutely necessary." This would furnish a theme for a "sermon" were it not for the fact that it is a *reductio ad absurdum.* Why should any drug be prescribed if not necessary? Why should the toxic effects of a sedative be greater when not indicated than when it is? Why should the term "absolutely" be used? It is obviously the duty of the therapeutist to decide when a remedy is indicated, as well as to detect when it is producing ill effects; if he is not capable of doing these, he is only fit for that form of mental healing known as "absent treatment."

Unfortunately most of the warnings are not directed against the *abuse* of the bromides or against possible unpleasant effects due to idiosyncrasy or continuous use without supervision by the competent practitioner, but against using them at all, or, only as a *last resort*, which usually means that the patient becomes discouraged and discontinues treatment before they are prescribed and, in many instances, the practitioner unskilled in their use, not only fails to use them, but, to excuse his dereliction (really, ignorance), prejudices the patient by regaling serious consequences from their use, so that the patient refuses to take them when prescribed. Furthermore, distinction is not made between the different salts, the toxicological effects of which differ. There are bromides and bromides—this may prove one of them.

Does the experience of the competent and watchful practitioner justify such adverse criticism and warrant such action on the part of the medical professor? We think not.

Like the greatly maligned, plebeian, but valuable, remedy, prunes, the bromides are the object of prejudice, born of ignorance, nurtured by inexperience and propagated by tradition.

If there is an efficient active drug in the pharmacopoea which does not occasionally produce unpleasant, and, if rashly used, even cause serious symptoms, we do not now recall it, yet many such are prescribed freely without the least thought of possible harm. However, unlike most active drugs, therapeutics teaches us there has never been recorded a fatal case of acute bromide poisoning which is certainly a valuable consideration in the use of a remedy.

Furthermore, many, if not most, articles of daily diet cause distressing and serious symptoms in certain susceptible individuals (not to mention fatalities from undetected or undetectable spoiled food), yet the majority of mankind live on them without a thought as to possible consequence.

As an example of the "poisonous" character of food, it is only necessary to refer to the "more frequent" causes of one condition, viz., urticaria (hives, or nettle rash), which are: shell fish, as oysters, clams, crabs and lobsters; fruits and vegetables with small seeds, as strawberries, raspberries, raisins and tomatoes; nuts, pork, especially sausage; oatmeal, cheese, mushrooms, and spices. The application of either cold or

hot water to the skin may also cause it, which may account for infrequent bathing of certain individuals.

If we are to treat our patients safely we must prohibit the following articles of diet which may cause serious, if not fatal, poisoning; milk and milk products, such as ice cream, cheese, cream puffs, frozen custard, etc.; meats, especially sausages (*i. e.*, Botolismus, a fatal case of which the author visited recently), pork and fish, which may also transmit tapeworms and trichinae; grain, causing pellagra, etc.; vegetables, as mushrooms, etc., which, also, are the carrier of intestinal parasites, etc., then forbid milk and water which frequently contain the organisms of infectious diseases. Furthermore, patients must not be permitted to visit a warm climate, lest they suffer heat stroke, or go to a cold climate, lest they get frozen, nor yet to a watering place for fear of drowning; besides they may be injured or killed *en route*.

If patients be permitted out for a walk, they may be struck with an automobile, come in contact with a live wire, etc., so they must be kept at home in bed with the outlined restrictions as to food, drink and bathing, the latter, also, may cause "colds" or nettele rash (the author saw the corpse of one who died in a bath tub), when they will *only* be endangered by starvation, burglars, fire, lightning, cyclones, certain infections and infectious diseases, and such diseases as may be caused or transmitted by flies, mosquitoes, etc., and pet cats and dogs.

It may be impossible to have all follow this regimen, since many people have a fear of beds because they believe most deaths occur therein, and there is foundation in fact for this fear; however, the physician so "conservative" as to avoid all possible danger to his patients, should most fear getting "fired"—here or hereafter.

Much of the undeserved criticism of the bromides results from the fact that some of the conditions for which the bromides are frequently prescribed often have serious, if not fatal, terminations; notably, epilepsy, delirium tremens, and the acute psychoses.

The most frequent cloak for the bromide "scare-crow" is the drug "habit."

While unprepared to prove there is no "such animal," we have never had the opportunity of observing it, though we have seen an individual who "nibbled" on bromide because the dosage had never been sufficient to overcome the condition for which it was prescribed, just as people often use quinine for malaria, *viz.*, in doses only sufficient to temporarily suppress the manifestations, which as often recur. However, since the quantity in such cases is not sufficient to do permanent good; neither does it do permanent harm. Furthermore, it is to be borne in mind that most chronic conditions for which bromides are prescribed, *viz.*, insomnia, epilepsy and functional nervous states, are themselves habits, *i. e.*, "recurring or fixed modes of action"—habits in themselves annoying and harmful, and often disabling and pernicious.

Another common erroneous belief is that the dose of the bromides must be continually increased to maintain their action—another evidence of lack of knowledge and experience.

Pharyngeal anesthesia with loss of pharyngeal and palatal reflexes are symptoms often ascribed to the bromides, yet observations have shown that it requires a single dose of from 125 to 150 grains to abolish the pharyngeal reflexes, 100 grains never being sufficient. Hunt & Symns* found that careful measurement of the pharyngeal excitability in ten cases of epilepsy before receiving bromide and after taking between 45 to 80 grains a day, often for several weeks, in no single case produced any alteration.

Their "observations show that the supposed effect of bromide on the pharynx, which has been copied from book to book, is non-existent," while the condition is frequently present in functional nervous states for which bromide is ordinarily prescribed.

Bromides, as with all active drugs, are not to be continued except under the watch-

*Seale Hayne Neurological Studies, Vol. I, No. 1, July, 1918.

ful eye and guiding hand of the skilled attendant, hence prescriptions should bear the legend, "not to be repeated or copy given."

As splints to the osseous and muscular systems, so are bromides to the nervous system, and since the surgeon does not discard splints because he fails to obtain satisfactory results in impossible conditions or because of an occasional deformity or paralysis—all possibly due to intractable patients; neither should the neurologist discard his "splints" because perfect results are not obtained in every case and under all conditions.

Even an occasional bad result would not justify withholding an indicated and necessary remedy, and no other should ever be prescribed.

The enormous toll exacted by electricity, motor cars, etc., does not cause a protest against their use, since their good far outweighs the harm.

Thus are we forced to the conclusion that "it is dangerous to live." Is it worth the risk?

It is likewise evident that he who fears to use the bromides, "strains at a gnat and swallows a camel"; and although not a corpse, he is certainly not a "live" physican.

The sooner physicians themselves learn the use of the bromides and teach the laity that in the conditions for which they are indicated, the danger lies in delay in their use, the better it will be for both physicians and patients.

Certainly those not competent to use bromides, as with other therapeutic agents, should not prescribe them, but they should not, by word or act, discourage their use by those whose knowledge and experience enable them to use these compounds discriminatingly and hence safely and successfully.—D. S. B.

STATE DEPARTMENT OF PSYCHIATRY AND SOCIOLOGY.

There has been introduced into the legislature of the state of California a bill whose object is to create a department of psychiatry and sociology at the State Penitentiary, at San Quentin, which marks a decided step forward though it is not as broad as is desirable and has certain objectionable features.

Following is a copy of the bill as introduced:

An act creating the department of psychiatry and sociology at the state penitentiary at San Quentin; providing for its organization; defining its powers and duties, and the powers and duties of its members; and making an appropriation to carry out the provisions hereof.

The people of the State of California do enact as follows:

SECTION 1. There is hereby created a department of psychiatry and sociology at the state penitentiary located at San Quentin.

SEC. 2. Within ten days after this act goes into effect, the governor shall appoint a psychiatrist, a psychologist and a sociologist. The psychiatrist shall be the chief executive of the department of psychiatry and sociology, and shall have had training for at least one year in one of the state hospitals for the insane. Each member shall be appointed to hold office for a term of four years. The governor shall fill all vacancies created in said department by the appointment of the same kind of specialist as was his predecessor.

SEC. 3. It shall be the duty of the board of prison directors to make and adopt such rules as are necessary for the conduct of the business of the department of psychiatry and sociology; to provide equipment for said department with necessary furniture, fixtures, apparatus, appurtenances, appliances and materials for the proper conduct of said department.

SEC. 4. It shall be the duty of the members of said department to conduct an examination and investigation of the case of every person committed to the state penitentiary at San Quentin.

SEC. 5. It shall be their duty to define from a psychiatric, psychological and sociological standpoint, the type of problem presented in each case; to make a scientific analysis of the various causative factors operative in each case; to outline the most promising plan of treatment for meeting at the same time, the needs of social security and the individual prisoner's reclamation; to bring to the attention of the prison directors and the warden of the state penitentiary at San Quentin the method of treatment proposed in each individual case.

SEC. 6. It shall be the duty of the members of said department to make an annual report to the governor and prison directors, such report to include the plan of treatment suggested, the treatment given, and the result accomplished.

SEC. 7. Suitable offices for the proper conduct of the department shall be provided by the warden of the state penitentiary at San Quentin.

SEC. 8. The psychiatrist of said department shall receive a salary of five thousand dollars per annum; the psychologist and the sociologist shall each receive a salary of two thousand four hundred dollars per annum.

SEC. 9. There is hereby appropriated out of any money in the state treasury not otherwise expended, the sum of thirty thousand dollars, or so much thereof as may be necessary, to be used by said department in furnishing, equipping and maintaining the same in accordance with the provisions of this act, and for the payment of the salaries herein provided for, for the fiscal year ending June 30, 1920, and the fiscal year ending June 30, 1921.

SEC. 10. The state controller is hereby directed to draw warrants in favor of the said department at such times and in such amounts as shall be approved by the state board of control, and the state treasurer is hereby directed to pay the same.

The bill, as will be noted, provides for the appointment, by the Governor, of a psychiatrist who shall have had training for at least one year in a (California) state hospital for the insane, a psychologist and a sociologist, the scientific duties of whom shall be to conduct an examination and investigation of the case of every person committed to the state penitentiary at San Quentin; and to define from a psychiatric, psychological and sociological standpoint the type of problem presented in each case; to make a scientific analysis of the various causative factors operative in each case; to outline the most promising plan of treatment for meeting, at the same time, the needs of social security and the individual prisoner's reclamation; to bring to the attention of the prison directors and the warden of the penitentiary the method of treatment proposed in each individual case.

While it is probable the work at the penitentiary will require the individual attention of the members of the board for some time after beginning their work, there should come a time in the future when they will be able to extend their labors to the study of certain others not within prison walls; hence it appears the bill should have been so drawn as to provide for such a contingent.

Another apparent defect is the requirement that the psychiatrist shall have had training, of at least one year, in one of the California state hospitals for the insane.

Not considering the questionable provision for restricting the appointment to a "native son" which, if not unconstitutional, is certainly un-American in spirit, the requirement of service in a hospital for the insane is obviously not calculated to always permit the obtaining of the best professional talent for the office and may even defeat the very object for which the provision is apparently intended, viz., efficiency.

From such a law properly drawn and wisely administered, a world of good could be accomplished, primarily, by pointing out to the people the nature of the criminal and the source from which the criminal element is derived, thus enabling them to deal more intelligently with the problem of preventing crime, and secondarily, through the proper classification and segregation of the various types of criminals, the applicaton of therapeutic measures when necessary, the restraint for as long a time as possible those who

are permanently defective and who would always be a menace to the community, with the release under wise restrictions or surveillance, at as early a date as possible the accidental offenders who may thus be restored to useful occupations, a great saving to the commonwealth could be had.

Herein is an innovation which may be advantageously emulated by less progressive states.—D. S. B.

PSYCHANALYSIS IN EARLY AMERICAN FICTION.

Charles Brockden Browne* is said to be the American forerunner of the new psychic fiction as practiced by the adherents of the psychanalytic school. He was more akin to these modern psychologists like Dostoevsky than are any of the later realists. While Hawthorne admitted his debt to Browne, it is difficult to see just how either of them can be classed as a psychanalyst. It is true that Brockden Browne** made rare use of the murder of a family by a religious paranoiac, using the evil skill of a ventriloquist which the paranoiac accepted as divine commands. While the picture is based in part on an actual case it has no relation to any sexual source of fear and anxiety. It is true that in another novel† he pictures a delinquent, intriguing girl from the Kallykak region of New Jersey. He also pictures a harlot family of a mother and two daughters in Philadelphia during the yellow fever epidemic of 1793. But neither in the heroes, nor in any of the characters of these two tales, is there any evidence of "intellectual submarine" surviving from youth. Hawthorne's picture†† of Mr. Dimmesdale's mind, after his interview with Hester when the two planned departure, has in it both sexual exaltation and the obsessional state which Poe calls: "the imp of the perverse." The chapter describing this is well designated as "the minister in a maze."

"The excitement of Mr. Dimmesdale's feelings as he returned from his interview with Hester lent him unaccustomed physical energy, and hurried him townward at a rapid pace. As he drew near the town he took an impression of change from the series of familiar objects that presented themselves. It seemed not yesterday, not one, nor two, but many days, or even years ago, since he had quitted them. There, indeed, was each former trace of the street as he remembered it, and all the peculiarities of the houses. Not the less, however, came this importunately obtrusive sense of change. The same was true as regarded the acquaintances whom he met, and all the well-known shapes of human life, about the little town. A similar impression struck him most remarkably as he passed under the walls of his own church. The edifice had so very strange, and yet so familiar, an aspect, that Mr. Dimmesdale's mind vibrated between two ideas; either that he had seen it only in a dream hitherto, or that he was merely dreaming about it now.

Before Mr. Dimmesdale reached home, his inner man gave him other evidences of a revolution in the sphere of thought and feeling. In truth, nothing short of a total change of dynasty and moral code, in that interior kingdom, was adequate to account for the impulses now communicated to the unfortunate and startled minister. At every step he was incited to do some strange, wild, wicked thing or other, with a sense that it would be at once involuntary and intentional; in spite of himself, and yet growing out of a profounder self than that which opposed the impulse." While Hawthorne admitted he owed much to Brockden Browne as a prototype, and while the various impulses described in Mr. Dimmesdale would be charged by psychanalysts to sexual

Current Opinion, April, 1918.
**Wieland.
†Arthur Mervyn.
††The Scarlet Letter, Chapter XX.

shocks during childhood, Hawthorne describes them as an alienist would who has seen them appear after sexual emotional exaltation. In some cases where sexual exhaustion has occurred the morbid fears and the obsessions may persist for some time. Here it would be perfectly possible to trace them to Freudian childhood suggestions. Where no exhaustion occurred and only the sense of relief appeared such suggestions would be without effect.

TRAINING SCHOOL FOR NURSES A SUCCESS.

We are authentically informed that the training school for nurses recently established at the Missouri State Hospital No. 4, Farmington, Missouri, met with immediate favor with those for whom it was intended and that it is in every way meeting the most sanguine expectations as to its beneficence. The lectures are well attended, not only by the nurses and attendants, but by all of the employees and officers and their families.

The Superintendent advises us that the noticeable results are kinder treatment and more consideration shown the patients; better sanitation and hygienic conditions, more desirable discipline on the wards, better ventilation and a pronounced conservation of heat, and a decided reduction in fuel expenses.

The Medical Staff are delighted with the beneficial results already apparent.

Such progressiveness may well be emulated by all similar institutions, since it should not only improve the effectiveness of the nurses, but prove equally beneficial to the teaching corps—the medical staff.—D. S. B.

SELECTIONS.

CLINICAL NEUROLOGY

Clinical Research and the Physiology of the Spinal Cord.—Head and Fernsides, *The London Lancet*, say that the war has given many opportunities of studying the results of gross injuries of the spinal cord and cauda equina, and this study has firmly established the physiological principles resulting from the clinical work of Hughlings Jackson, the morphological investigations of Gaskell, and the laboratory experiments of Sherrington, Langley, Anderson, and others of the Cambridge school of physiologists. To an exposition of certain of these phenomena the greater portion of the last number of *Brain* (Vol. XL, Parts 2 and 3), edited by Dr. Henry Head, is devoted. The number opens with a review of the innervation of bladder and urethra, by Dr. E. G. Fearnsides, giving a retrospect knowledge upon the involuntary nervous system and its relations with the lower portion of the spinal cord. Dr. Head and Captain G. Riddoch follow with a paper on the automatic bladder, excessive sweating, and some other reflex conditions, while in a third paper Captain Riddoch discusses the reflex functions of the completely divided cord in man and compares them with those of less severe lesions. All these authors agree with Sherrington that inhibition is one of the most fundamental and universally applicable of all physiological conceptions. In his masterly work on the integrative action of the nervous system Sherrington showed more than a decade ago that the basis for understanding the activities of the central nervous system must be sought in its integrating and adapting functions and the investigations now recorded by Head and Riddoch, and by Riddoch alone, serve to emphasize the importance of the mechanism which Sherrington has called postural in determining the type of response in a man whose spinal cord has been severely damaged. So long as this mechanism is intact, the impressions which constantly pass from the otic labyrinths and somatic muscles to the cerebellum, pons and mid-brain determine a state of tonic contraction in the group of anti-gravity muscles. When the damage is severe enough to destroy the postural mechanism the lower portion of the spinal cord is found to react to stimuli of whatever origin in a manner called mass-reflex by Head and Riddoch. Whenever the cord reacts in this massive manner three types of adaptive response only have been determined: (*a*) *Protective*: A uniphasic withdrawal of paralyzed parts after "harmful" stimulation ("flexor spasms"). (*b*) *Excretory*: By this form of activity the contents of the bladder and rectum are discharged, whilst the skin over the parts supplied through sympathetic fibers derived from the freed portions of the spinal cord is excited to intense sweating. (*c*) *Sexual*: A primitive type of reaction which is excited to activity by stimulation of either the external organs of generation or of the paralyzed parts.

As a part of the generalized "mass-reflex" in cases of severe injury to the spinal cord, excessive sweating takes place over areas of skin supplied by sympathetic nerve fibers originating below the level of the lesion. Even when the bladder is freed from all central nervous connections and control, it may begin to expel its contents automatically as early as 25 days after the injury. The form assumed by the activity of such an automatic bladder is entirely independent of the site of the lesion in the spinal canal. In the absence of the postural mechanism, automatic evacuation may be facilitated by the most various afferent impulses passing into the lower portion of the spinal cord, unless a cauda equina lesion prevents the impressions from reaching the cord. Through the afferent fibers associated with the sympathetic outflow, and reaching the bladder via the hypogastric nerves, a patient may be conscious of alterations of

tension within his bladder and yet be totally unable to effect by conscious effort its automatic activity. The lesson is drawn that in cases of lesion, whether due to injury or disease, it is essential to avoid exercising undue tension on the bladder wall when washing out the bladder; undue pressure diminishes the power of spontaneous evacuation and retards the recovery of the vesical musculature.

LUMBAR PUNCTURE FOR OBSTINATE HEADACHE.—It has long been known that severe headache results in many cases from increased intracranial pressure. Instances have been recorded in which relief from such headaches has occurred after the spontaneous discharge of cerebrospinal fluid from the nose or from the ears, or from both. Hence it is not unnatural to suppose that severe recurrent headache may in some cases be due to sudden increase of the pressure of the cerebrospinal fluid, whatever the cause of this increase may be, and that lumbar puncture should relieve such headaches. Professor Mingazzini, of Rome, has recently published an account of forty-seven patients treated on these lines. All these patients had more or less permanent or continuous headaches not relieved by the ordinary methods of medical treatment; six were men, forty-one women. Cases with tuberculosis, syphilis, granular kidney, chronic alcoholism or excessive tobacco smoking, epilepsy and intracranial tumors, were excluded from this series of patients. In every case the cerebrospinal fluid withdrawn was found to be normal on examination, free from globulin, and contained only a few lymphocytes. As a rule, the lumbar puncture made the headache worse for a few days, but a definite cure was obtained in twenty-four cases and a considerable improvement in fifteen more. No benefit resulted in the remaining eight. One patient, a woman of sixty, who had frequent headaches since her youth and daily for the preceding six months, was cured by a single lumbar puncture; another patient, a girl of twenty-two, who had headaches for two years, after typhoid fever, received no benefit from the puncture.

It was noted that if the pressure of the cerebrospinal fluid was normal or low, lumbar puncture failed to relieve the headache; it was successful where the pressure was found to be high. The results seem independent of the quantity of fluid withdrawn; thus no improvement might follow the removal of 15, 20, or even 30 c.c., while cure might follow the withdrawal of 10 or even 5 c.c. Analysis of the histories of the patients seemed to show that the treatment acted best in cases in which the headaches had begun at the age of ten or twenty, and had later become permanent for no appreciable cause.

The patients not improved by the puncture were those in whom the headache had been permanent from the outset, or had begun later in life and become permanent after lactation or the onset of some illness, or was associated with a neurosis, such as trigeminal neuralgia or epilepsy. The pathology of these headaches Professor Mingazzini leaves, as he found it, obscure. They are thought to depend on increase in the quantity and pressure of the cerebrospinal fluid, due to some upset in the balance between secretion and absorption. Some connection between the choroid plexuses, the main secretors of the fluid, and glands with internal secretions, such as the ovaries or testes, has been thought to exist; this would explain, in part, the frequency of monthly headaches in women and the general tendency of headaches to grow less with advancing years.—*British Medical Journal*, March 9, 1918.

THE CLINICAL DISPLAY OF SYPHILIS OF THE NERVOUS SYSTEM.—Joseph Collins, *American Journal of Medical Sciences*, 1918, Vol. CLVI, p. 377, presents statistics which lead to the following conclusions: (1) syphilis of the nervous system constitutes about 25 per cent. of the neurologist's work; (2) tabes and general paresis constitute about one-half of syphilis of the nervous system; (3)

when syphilis invades the nervous system, the symptoms that result resemble so closely those of any disease of the nervous system that expert examination is necessary to detect it. In the table there are a certain number of cases of migraine, of trigeminal neuralgia, or poliomyelitis, of arthritis deformans, etc. The author is not attempting to prove that there is such a disease as syphilitic migraine or syphilitic poliomyelitis. An individual who has had syphilis and upon whose soma it has written its signature may have attacks of migraine, of trigeminal neuralgia, of poliomyelitis or any other disease without such disease being of syphilitic nature. When the physician attempts the interpretation of such a case he must decide for himself whether or not the disease which the patient then has is of syphilitic origin. The author's criteria are if there is no other attributable cause, and if the disease yields to antispecific treatment, he is suspicious that the disease is of syphilitic origin. When he discovers alteration in the cerebrospinal fluid, which is satisfactory evidence of an active syphilis in the central nervous system, his conjecture becomes a certainty. For instance, a patient who recovers from trifacial neuralgia under vigorous salvarsan and mercurial medication and whose serum and cerebrospinal fluid (Wassermann) becomes negative is considered by him to be a case of luetic tic douloureux. Syphilis of the nervous system may and often does cause the symptoms of practically every disease of the nervous system. The practical application of the conclusion is that no one can be sure that syphilis may not be an etiologic factor until after laboratory investigation has been done. Syphilis invades the nervous system and often disorders it without producing the most constant pathognomonic sign, namely, loss of circularity of the pupils and impaired response to light and shadow. The sure way of curing syphilis of the nervous system is to prevent it.—*Amer. Jour. of Syphilis.*

War Contractures—Localized Tetanus, a Reflex Disorder, or Hysteria.—A. F. Hurst, *Seale Hayne Neurological Studies*, July, 1918, observes that from an early date in the war there has been much controversy as to the nature of the frequent cases in which spasm occurs as a result of injuries of the soft parts of the limbs, with or without the bones and joints being involved. The commonest cause is a wound through the hand, foot, forearm, or leg, the symptoms generally developing above and below, as well as in the immediate neighborhood of, the injury in areas which do not correspond with the distribution of any peripheral nerve. The severity of the symptoms does not vary with the amount of infection or extent of the injury, which is often trivial. They are in fact very rarely associated with severe wounds or amputations. The symptoms are generally discovered when the dressings are removed, but may be noticed immediately after the infliction of the wound or only develop gradually several weeks later. A single segment of the limb is generally involved, but the whole is occasionally affected. The contracture may be associated with paralysis in the same or different segments of a limb.

The conclusion has been reached that the condition is a new one, which has arisen as a result of some special circumstances arising in the present war, and described to a localized tetanus, which had never been recognized in man before the war, but which undoubtedly occurs now that the routine administration of prophylactic injections of anti-tetanic serum has caused generalized tetanus to become comparatively rare.

Observations lead to the conclusion that hysteria is generally the cause, and that even when localized tetanus or a reflex spasm is present at the onset the symptoms are often perpetuated by auto-suggestion, thus eventually becoming hysterical. The author has not seen a single case in which a diagnosis of reflex contracture appeared to be justified.

1. *Reflex Contractures.*—The tendon reflexes are often exaggerated, and the muscles and sometimes the nerves are abnormally irritable to mechanical stimulation,

the response being unusually prolonged; in some cases these signs are only obvious when the patient is given a general anesthetic, which produces relaxation of the contracted muscles less readily than might be expected in hysteria. Several cases in which these signs were present yielded to psychotherapy, thus proving the hysterical origin of the condition. Excessive sweating, decalcification of bone, trophic changes in the skin, with excessive growth of hair and thinning of the nails, may be present; when the surrounding temperature is low the cutaneous reflexes are lost and the affected part becomes painful, cyanosed and cold.

Paralysis, accompanied by a considerable degree of atrophy after persisting for two years, was proved to be hysterical by the immediate cure following suggestions. In such cases, the paralysis and contracture may be so profound that secondary trophic and secretory changes may occur as the result of the venous and lymphatic stasis, which is a natural sequel of prolonged and complete immobility, especially if accompanied by contracture in a position in which the veins are obstructed by the rigid muscles.

Cases of contracture have occurred in the absence of any wound, so that a reflex origin was excluded, their hysterical nature being subsequently proved by the cure which followed psychotherapy.

Reflex contraction of the neighboring muscles is not uncommon immediately after a wound is inflicted, the reflex being protective in nature, just as is the reflex contraction of the abdominal muscles in acute appendicitis, or after perforation of a gastric ulcer. When the symptom persists, this is the result of auto-suggestion; the contracture is thus primarily reflex and subsequently hysterical.

2. *Localized Tetanus.*—Until the present war the only form of localized tetanus which had been recognized was the so-called cephalic or head tetanus. A few cases had been recorded in which the spasms began in the injured limb and remained most severe in it after generalization occurred; but the first case of tetanus, in which the symptoms were strictly localized to one limb throughout the illness, was described in May, 1915, by Courtellement. Numerous observations on the subject have been published in France and England since that date, but even now many cases of localized tetanus probably escape recognition through want of familiarity with the condition. Although there is no doubt that the extensive use of prophylactic injections of antitetanic serum is the cause of the relative frequency of localized tetanus since 1915, the author believes that the disease is not an entirely new one, but existed before the introduction of serum prophylaxis, as at least one typical case has been observed which occurred in spite of the fact that no serum had previously been injected (Claude and Lhermitte). The author has seen nine cases of local tetanus, so that there can be little doubt that the condition is by no means uncommon.

The large majority of cases of localized tetanus occur as a result of the protection afforded by prophylactic injections of serum being sufficient to prevent generalization, but insufficient to prevent the production of symptoms by the action of toxins, absorbed by motor nerve endings near the wound, acting upon the corresponding segment of the spinal cord. In the few cases in which no serum has previously been injected the absence of generalization is probably due to the number of tetanus bacilli in the wound being small or the toxin they produce being unusually feeble.

The incubation period in some cases is as short as in ordinary tetanus, but just as frequently the symptoms appear between the twentieth and thirtieth days, and occasionally still later.

The first obvious symptom is either twitching or stiffness in the muscles near the wound. The spasms consist either of painful clonic movements or of momentary and painless twitches. They become gradually less frequent as the stiffness of the limb becomes more pronounced, and in many cases they disappear entirely owing to the

permanent tonic contraction of the affected muscles being the maximum possible contraction, so that additional twitching is impossible.

The contractions may remain localized to a single segment of the limb, but more commonly the whole arm or leg is involved. The tonic contraction produces a characteristic attitude. The leg is generally in a position of extension with the foot dorsiflexed, the limb being as rigid as a poker; less frequently the knee is flexed. The arm is generally flexed at the elbow; the upper arm is adducted and the shoulder shrugged.

In true localized tetanus the contractions remain strictly localized throughout. The nature of such cases might be regarded as doubtful were it not for the fact that every intermediate type of case has been observed between the entirely local form and the severe generalized form beginning with slight local symptoms. The indications of generalization may be very slight and only last from twenty-four to forty-eight hours. There may be slight difficulty in swallowing, or some pain and stiffness is felt in the masseters or neck, especially at the height of spasms affecting the limb; but neither definite trismus nor retraction of the head is present, and the chest can still be touched with the chin.

Most cases of localized tetanus which occurred before the middle of 1915 must have been diagnosed as traumatic hysterical contracture, and five out of the nine cases seen during the last two years were at first regarded as hysterical in origin, but whilst the majority of cases diagnosed as reflex contractures are hysterical the remainder are really examples of localized tetanus. On the other hand, the contractures in at least two cases which have been published as examples of local tetanus must really have been hysterical in origin, as they developed immediately after the wound was received, whereas it is impossible for tetanus to develop until the bacilli introduced at the time of the wound have had time to produce toxin, which has then to travel to the central nervous system before it can give rise to symptoms.

The diagnosis between localized tetanus and hysterical spasms may be extremely difficult. Thus tetanic contractures have been maintained by auto-suggestion after the primary condition had more or less completely disappeared; the removal of the hysterical element by psychotherapy left behind a small organic residue due to the primary condition. Spasms which begin immediately after the wound is inflicted cannot be due to tetanus; they are generally reflex and protective in nature, but are often maintained after the first few minutes or hours by auto-suggestion. A later onset is compatible with both conditions, and in both the extent of the contracture is often out of proportion with the size of the wound. If the contracture persists in sleep hysteria can be excluded. A general anesthetic causes hysterical contractures to disappear more rapidly than tetanic contractures, which persist to some extent even under deep anesthesia. The tendon and bone reflexes are more often exaggerated in tetanus, and the exaggeration is generally most obvious when partial relaxation has been produced under an anesthetic. If the muscles are of a wooden and unvarying hardness tetanus is almost certainly present. An increase in the size of the muscle, possibly due to obstruction of its lymphatics, without tenderness or subcutaneous edema, is conclusive evidence in favor of local tetanus. The continued tonic contraction in tetanus is generally accompanied by spasmodic and more or less painful contractions, which are often brought on by external stimuli.

When there is any doubt as to the diagnosis the condition should be assumed to be local tetanus, as in local tetanus it is never possible to say whether generalization may not later develop. Early injections of anti-tetanic serum should prevent this, and they will do no harm if the spasms are not really due to tetanus. Whenever it is possible that the spasms are wholly or in part hysterical in origin the effect of psychotherapy should be tried.

3. *Hysterical Contractures.*—Hysterical contractures may be present alone or

associated with hysterical paralysis, which is generally more widespread than the contracture. Hysterical contracture may follow wounds, often of a very trivial nature, but the attitude assumed has no anatomical or physiological relation to the wound; it depends upon the patient's own ideas and is often unlike any position assumed in organic disease, but it is always capable of exact imitation by voluntary action. On attempting to overcome organic contractures no change occurs in the muscles involved. but in hysterical contracture increased resistance, which is often intermittent, is felt, and if the patient's attention is distracted it may be possible to overcome it completely. The former relaxes incompletely in sleep and slowly under general anesthesia, the latter completely in sleep and more rapidly and completely under anesthesia.

Treatment.—Forcible passive movements in the direction opposed to the normal action of the contracted muscles combined with verbal suggestions and continued without interruption until the resistance is broken down, however much pain may appear to be caused, almost invariably cures hysterical contractures in a few minutes, even if they have lasted for weeks or months. The passive movements are then combined with active movements until the condition of the limb is normal. It is never necessary, as has been recommended, to continue the passive movements for several hours by relays of convalescent patients carrying on the treatment until finally the muscles become so fatigued and toneless that they are no longer capable of producing the original deformity.

A Clinical Study of Fifty-five Cases of Hypothyroidism in Children.—Murry B. Gordon, *Archives of Pediatrics*, October, 1918, concludes that the delinquent, backward and mentally defective child is the frequent end result of a disturbed metabolism produced by a derangement of the glands of internal secretions, and that there is an intimate corelationship between the different hormones, that generally no one endocrine substance is at fault alone but that they are all involved to a greater or less degree in any disease which threatens the integrity of any one gland, causing thereby a change in the general body metabolism, though in the majority of cases of mental delinquency in children, hypothyroidism is the predominating pathological factor.

This study is based on observations made on a series of 55 cases of hypothyroidism, of which 21 cases were undoubted sporadic cretinism and 34 of various minor forms of hypothyroidism.

Considering the causes, sex showed no predilection; there was a predominance of foreign nationalities represented; birth traumatism nor precedence birth did not appear to be a factor; syphilis is not an etiological factor.

Physical defects are: backwardness in the development of the power of holding up the head, sitting, standing, walking, talking and teething, certain changes in the bony system, skin and appendages, and various other deviations due to disturbed metabolism such as marked deficiency of height and weight, high arched palate (frequent), subnormal temperature and cold extremities, dryness of skin and hair, scaly skin, goose-flesh skin, umbilical hernia, distended abdomen, macroglossia, drooling, gaping mouth and eczema. Constipation is the rule, and delay in closing of the anterior fontanel nearly universal.

The mental defects range from slight dullness to pronounced aberration, the most frequent manifestation was delayed speech.

Treatment with thyroid extract—a modification of the French, and most feasible in preventing untoward effects—is followed by rapid improvement of the physical defects, the improvement in the mental symptoms not being so rapid or so complete. Preliminary treatment is given, consisting of cleansing of the bowels with calomel in 1-10 gr. doses for 10 doses, followed by a saline. The next day, thyroid extract 1-10 grain three times a day is given which is administered for ten days and then

discontinued. Elixir glycerophosphates of lime and soda, 1 dram three times a day, is then prescribed for one week, when the thyroid is resumed in 1/8-grain doses three times a day. This alternation is adhered to, gradually increasing the amount of the thyroid until 1 grain three times a day is taken—never more, and the thyroid is not prescribed in conjunction with any other remedy at same time, if other medication is called for, this is given in place of the phosphates. In cases associated with syphilis, inunctions of blue ointment are given, or the internal administration of calomel or bichloride of mercury and potassium iodide. In anemic children, a tonic is ordered, pluriglandular extracts are occasionally prescribed.

The dosage of thyroid extract depends upon the individual susceptibility and not upon the age or body weight; care must be taken in the administration until the child's capability is ascertained. A reaction is produced if this is exceeded and is manifested by nervous, gastrointestinal or cardiac symptoms of hypersecretion, such as extreme restlessness, crying spells, loss of sleep, diarrhea and tachycardia; pruritus, intertrigo and other skin changes, similar to those met with in myxedema, are often produced by a too rapid increase of the dosage.

Prognosis depends upon : (a) the age of the child at which treatment is first instituted, (b) the regularity and length of time under treatment. The best results are obtained in children who are seen before the end of the first year, the next best during the second year and so on; a complete recovery being in inverse ratio to the age of the child.

Treatment of Neurosyphilis.—Richard W. Harvey, *American Journal of Syphilis*, October, 1918, expresses the opinion that we are depending too much on the laboratory diagnosis of central nervous system syphilis; whereas we should place our main reliance for diagnosis on the clinical examination. In other words, are we using the laboratory to substantiate and clarify our diagnosis, and depending upon a positive Wassermann, which we know to be unreliable?

The author considers: first, more careful study of the individual case to try and fit the treatment to the case; second, the value of a careful clinical examination; third, the laboratory as an aid to diagnosis, and repeated laboratory examinations in the prognosis and treatment of cases.

Cases occasionally occur in which physical examination is negative. The physician should be particularly careful in inquiring into "rheumatic pains" and in investigating headaches, dizziness, visual disturbances, vomiting, difficulty in holding or starting urine, paresthesiae, loss of memory, depression, nervousness, languor, loss of weight, fever, loss of appetite. The scalp, pupils, glands, reflexes and sensations should be carefully examined.

The value of frequent laboratory examinations and especially the gold chloride reaction are strongly emphasized. The gold chloride test requires a very small amount of spinal fluid and is of a definite diagnostic and prognostic value. In a recent investigation of 100 cases in the clinic and hospital the gold chloride reaction was positive in 100 per cent. of paretics and in 90 per cent. of tabetics, and negative in 100 per cent. of negative cases. Three cases of cerebrospinal lues without marked mental symptoms were prognosed unfavorably on the gold chloride alone, and recent developments have justified the reliance on the spinal fluid findings, each of the three cases having developed paresis.

A negative Wassermann in the blood serum should not rule out syphilis. Faint positive and single positive Wassermanns are of little value without definite clinical findings. Effects of previous treatment on serological and spinal fluid tests should be borne in mind. There is usually no justification for a spinal puncture without positive clinical signs. Cell counts in the spinal fluid are of the greatest positive value. After an examination of hundreds of fluids I have come to the conclusion that cell

counts mean more than the Wassermann and are at least as valuable as the gold chloride reaction in diagnosis. Three cells per c.mm. should be taken as the minimal count. During treatment a reduction in the cell count occurs before the Wassermann diminishes. In reporting the spinal fluid Wassermann, the physician should insist on the amount of fluid used in performing the test, as the Wassermann may be plus in 1 c.c. and negative in 0.2. The antigens used in the Wassermann test should be specified. A cholesterinized reinforced antigen and a simple antigen should be used with each specimen.

Diagnosis and Treatment of Syphilitic Affections of the Acoustic Nerve, with Special Reference to the Use of Salvarsan.—George E. Davis, *The Urologic and Cutaneous Review*, 1918, Vol. XXII, p. 631, asserts that the occurrence of focal reactions in the acoustic, facial or other cranial nerves during the course of salvarsan therapy, in syphilitic cases, is no incrimination of this remedy directly, but rather an indictment of the technic of administration. Either the dose has not been sufficiently large, else not repeated sufficiently often and continued sufficiently long to completely destroy all the spirochete pallida, particularly those in avascular foci—as nerve tissue, or in other foci or recesses difficult of access—as the cerebrospinal fluid. When properly given we may safely acquit salvarsan of producing neurotropic lesions, as "neurorecidives," but we cannot emphasize too strongly that its safety and efficiency in preventing and curing such syphilitic lesions depend upon its timely and intelligent administration, controlled by repeated examinations not only of the blood but of the cerebrospinal fluid.—*Amer. Jour. of Syphilis.*

Some Observations on Latent or Clinically Inactive Syphilis in the Canal Zone.—Guy L. Qualls, Proceedings of the Medical Association of the Isthmian Canal Zone, 1917, Vol. X, p. 58, reports that from a total of 1,198 colored surgical patients, 908 showed no evidence of syphilis and did not give history suggestive of the disease; 297 showed active evidence of syphilis or gave histories indicative of previous syphilitic infection. The Wassermann test survey shows 23.7 per cent. of the non-suspects to be syphilitic, and 36.7 per cent. of the suspects to be syphilitic. A great total syphilitic infection of 27 per cent. exists among all colored employees admitted to the surgical wards. The latent syphilitic infection among colored male employees in the Canal Zone is exceedingly high—23.7 per cent., as compared with the white employees showing 2.3 per cent. The total syphilitic infection among the white surgical patients is 15 per cent. The routine blood Wassermann test is an ideal to be attained in hospital practice.—*Amer. Jour. of Syphilis.*

EXPERIMENTAL NEUROLOGY.

Pharyngeal Anesthesia.—Under the caption, Studies on Hysteria, Hurst and Symns, *Seale Hayne Neurological Studies*, July, 1918, report the results of observations made to determine whether or not pharyngeal anesthesia was an indication of hysteria.

The following scale, which gives an approximate idea of the meaning of each number, was used in their studies:

0. Anesthetic and no reflex.
1. Hardly felt and no reflex.
2. Felt easily, and very slight reflex.
3. Slight levator reflex.
4. Good levator and slight tensor reflex.

5. Stronger levator and tensor reflex.
6. Very brisk reflex, making examination very difficult.
7. Maximal reflex, making examination quite impossible.

The sensibility was then systematically recorded in a large number of men, some healthy, others suffering from a great variety of surgical and medical conditions, and others suffering from definite hysterical symptoms, the nature of which were always finally confirmed by their cure by means of persuasion and suggestion alone. The examination was made without indicating to the patient the object in view. He was told to open his mouth, and the back of the pharynx and soft palate were then touched with some blunt object, the tongue being depressed when necessary. In the rare cases in which no reflex was produced the man was asked what he had felt during the examination.

Tables are given showing the pharyngeal sensibility in 170 individuals with no hysterical symptoms and 64 with hysterical symptoms. A third table shows separately the cases of hysterical aphonia and mutism.

Their figures show conclusively that pharyngeal sensibility is no more deficient in individuals suffering from hysterical aphonia or other hysterical symptoms, such as paralysis, contractures, fits, blindness, or deafness, than in individuals who neither are suffering nor have ever suffered in this way, and varies in a similar manner in different people. When care is taken to avoid suggestion, complete pharyngeal anesthesia is hardly ever found, and the comparatively rare absence of reflexes is met with in normal pople just as often as in patients with hysterical symptoms.

In several cases of hysterical aphonia, as well as of other hysterical symptoms, it was found that the pharyngeal excitability remained unaltered after a cure had been obtained. The single case in which complete pharyngeal anesthesia was present was that of a stolid individual convalescent from neurasthenia, due to simple exhaustion. He had had no hysterical symptoms and there was no history of hysterical manifestations in the past.

The authors conclude that pharyngeal anesthesia is not a stigma of hysteria, and that when it is habitually found by a given observer, it must be produced in the majority of the cases by involuntary suggestion on his part. As most patients suffering from hysterical symptoms are abnormally suggestible, it is more likely to be found by careless examination in such individuals than in others. As many individuals suffering from organic disease are equally suggestible, pharyngeal anesthesia may easily be produced in them.

In order to explain the frequently repeated assertion that laryngoscopic examinations are particularly easy to make in patients with hysterical aphonia, it is to be remembered that about 25 per cent. of patients suffering from aphonia or other hysterical symptoms have, like a similar proportion of normal individuals, a comparatively insensitive pharynx (1 or 2 in our scale). The presence of the insensibility would not be remarked upon in a normal individual; but its presence with hysterical symptoms would at once strike an observer brought up with the idea that pharyngeal anesthesia is a stigma of hysteria, and the one case confirming this would make more impression on his mind than the three in which the pharynx was more sensitive. Moreover, these observations show how easily pharyngeal anesthesia is produced by suggestion, and a few words of encouragement by the observer is enough in many cases to render a previously sensitive pharynx insensitive, although the observer has no notion that his words will have such a striking effect. In most individuals the pharyngeal sensibility remains unaltered on repeated examination, but in abnormally suggestible men, whether they are actually suffering from hysterical symptoms or not, the sensibility was frequently reduced from 3, 4 or 5 to 1 or 2 by direct suggestion.

OBSERVATIONS UPON THE CALCIUM CONTENT OF THE BLOOD IN INFANTILE TETANY AND UPON THE EFFECT OF TREATMENT WITH CALCIUM.—John Howland and W. McKim Marriott, *Johns Hopkins Hospital Bulletin*, October, 1918, believes the diagnosis of tetany from the clinical symptoms and by means of the accessory diagnostic signs may be made with sufficient accuracy; but it is another matter to determine what it is that brings about this strange hyperexcitability of the nervous system to insults and stimuli of all kinds. There have been many hypotheses suggested, but none has been as yet entirely convincing. It has been insisted that tetany is only a symptom of rickets, but tetany is found at times when no rickets is discoverable and many children with the most extreme evidences of rickets never manifest any evidences of tetany.

Tetany has been referred to an improper diet, to an absence of breast milk or to an excessive quantity of cow's milk, but that no particular food can be held solely responsible is shown by the fact that tetany may be seen after almost any form of diet.

Tetany has also been referred to the absence of an essential substance or "vitamine" in the diet, but many cases of tetany are to be seen when the diet of the infants has been composed wholly or in part of cow's milk which has not been heated and hence still contains the vitamines.

There are many points of similarity between the tetany of parathyroidectomized dogs and human tetany, but experiments of Binger show that typical tetany may be produced in dogs when the parathyroids are left entirely undisturbed.

The authors have studied the relationship of calcium and infantile tetany during the last two and one-half years. It is apparent that merely from the determination of the intake and excretion of calcium, little can be learned. It is of prime importance to determine the quantity of calcium circulating in the blood. It was necessary to develop an accurate method that would allow duplicate determinations to be made with a small amount of blood. This was done. The method is sufficiently exact to determine the calcium in 2 c.c. of serum with an error of not more than 5 per cent.

From their experiment the authors are convinced that infantile tetany is due to a diminution in the calcium of the serum, but the causative factor is unknown.

Clinically they found that calcium has a very prompt effect in preventing all of the symptoms of active tetany. In the course of a few hours the symptoms diminish in intensity and almost always in 36 or 48 hours have entirely disappeared. The calcium content of the serum rises. In some instances it reached nearly normal in the course of a few days. In the majority of instances, however, it did not reach normal, but remained between 7.5 and 9 mg. for a long time, despite the continued administration of calcium. The symptoms, however, have been held, entirely in abeyance, but the calcium administration must be continued. The cessation of the drug for a few days, perhaps even hours, will allow the return of symptoms and it is altogether probable that in many instances it must be continued until in the ordinary course of events the tendency to tetany disappears. This is added evidence that the calcium deficiency in tetany is not a primary condition. It is brought about by some unknown factor which diminishes to a very marked degree the calcium content of the serum, which is operative chiefly during certain months of the year and which gradually loses its effect or disappears.

The effects of calcium lactate were not so prompt as those produced by calcium chloride, which is administered in the food, and continued in most instances for several weeks and then gradually diminished, both in amount and frequency of administration until it was discontinued entirely.

In many instances phosphorus and codliver oil have a distinct effect in improving tetany. At times their influence is slight, and action slow and is often not sufficiently marked or sufficiently prompt to prevent the development of dangerous or even fatal symptoms. While these substances are indicated they cannot take the place of calcium. In the presence of severe or dangerous symptoms, chloral, morphine and chloroform and

magnesium sulphate hypodermatically must be used in sufficient amount and frequently enough repeated to hold the symptoms in check until calcium in full doses produces its sedative effect. This is usually with 36 or 48 hours. Thereafter only the calcium need be given.

THE CENTRAL CANAL OF THE SPINAL CORD.—S. P. Kramer, *American Journal of Insanity*, October, 1918, in a previous communication in 1912, reported that he was able to demonstrate in the dog by the injection into the spinal canal of vital stains a circulation of cerebrospinal fluid upward through the central canal of the cord to the ventricular system of the brain. All authors agree that it is open in the lower animals and in young children. In the adult the results of investigation vary, so that the author later undertook to determine in what percentage of adults the central canal was patent throughout the length of the cord.

Out of 206 cords examined, the central canal was open throughout in 15 instances or 7.23 per cent.

In the previous communication, the persistence of the central canal of the cord was offered as an explanation of the occasional paralysis of the respiratory center following the lumbar injection of cocaine for the purpose of anesthesia. That is, in the presence of an open central canal the drug may be carried up to the fourth ventricle and affect the respiratory and other vital centers. The symptoms of lumbar cocaine (or stovaine) anesthesia speak for the transmission of the drug throughout the central canal. Thes patients have a partial motor paralysis, with loss of the sense of pain and temperature. The muscle and tactile senses are not abolished. This disturbance of sensation corresponds to that which is found in syringomyelia, where the lesion is about the central canal. It is here that the cocaine comes in contact with the fibers of pain and temperature sense as they pass upward in the central gray matter. The fibers for tactile and muscle sense do not reach this area and are unaffected by the drug. The cocaine also reaches the motor cells in the anterior horns by diffusion through the gray matter from the central canal.

This anatomical condition may account for the deaths by respiratory failure that occasionally follow the injection of serum containing trikresol into the spinal canal in cases of cerebrospinal meningitis.

The author was able to demonstrate in three spinal cords from young children the truth of Stilling's assertion, sixty years ago, viz., the central canal opens into the posterior median fissure of the cord in the region of the conus medullaris and that during life the entire canal was filled with cerebrospinal fluid. This statement, as well as Stilling's drawings showing this opening, was neglected or denied by most anatomists.

The author's experiments show how it is possible for a poison or an infective agent to reach the meningeal surface of the cord and the central gray matter and leave the rest of the cord unaffected; that it is possible for disease to spread through the medium of the cerebrospinal fluid upward, through the central canal and by diffusion therefrom into the central gray matter. Poliomyelitis is a disease of childhood. An ascending paralysis may also occur in adults though more rarely than in children.

In all cases of death from poliomyelitic disease, the condition of the central canal of the cord must in the future be investigated.

NEURO-DIAGNOSIS.

LEUCOCYTOSIS OF THE SPINAL FLUID IN THE DIAGNOSIS OF MENINGITIS.—Chas. E. Perkins, *American Journal of Surgery*, September, 1918, presents a few observations and refers to several cases, upon the value of the count, numerical and

differential, of the spinal fluid cells, as furnishing evidence in the diagnosis and management of various complications of purulent otitis media.

The spinal fluid normally contains somewhat under ten cells to the cubic mm., and these are lymphocytes with perhaps an occasional endothelial cell. There should be no polymorphonuclear cells. A rather large number of diseases are capable of increasing the number and changing the character of these cells. Nevertheless when, following a purulent middle ear process, one has clinical evidence of, or has reason to expect, meningeal involvement, the change in the kind and number of leucocytes of the fluid obtained by lumbar puncture, in conjunction with certain chemical tests, affords valuable evidence. In such cases, however, if syphilis is excluded, one seldom will make a mistake in attributing the leucocytosis to the process complicating the otitis media.

Considered from an otological standpoint, the presence of an increased leucocyte count with substantial polymorphonuclear percentage, indicates that an inflammation exists either within the meninges themselves or in their immediate proximity.

If the subdural space is infected pus will be found in the cerebrospinal fluid. In the first stages the cell count will be low and will mount more or less until, as death approaches, it may be well into the thousands. The polymorphonuclear percentage also increases, to above 90 per cent. in some instances. If, however, the process becomes circumscribed, the cell count will not mount so rapidly unless the barrier adhesions give way and the process becomes general. The fact that the meningitis can become circumscribed, although quite extensive, accounts for some reported instances of death from meningitis, verified post mortem, with normal spinal fluid. Thus the process has been sufficiently extensive to result in a fatal termination from changes in the brain cortex, absorption of toxins, etc., without extending to the spinal system or allowing the products of inflammation to reach the lumbar enlargement.

In the other groups of cases, the inflammatory process is in immediate proximity to the cerebrospinal spaces, which may not be invaded by bacteria. Leucocytes may migrate into the spinal fluid as they do into the tissues in the neighborhood of any severe inflammation. This explanation accounts satisfactorily for many of the cases of so-called serous meningitis. As the serum finds its way along with the white blood cells into the cerebrospinal fluid, it is customary to find in these patients a positive serum globulin test. As instances of processes which may bring about this condition may be mentioned, brain abscess, extradural abscess, sinus thrombosis and labyrinthitis.

In brain abscess the increase in cells and the amount of cerebrospinal fluid is often caused by the approach of the abscess cavity to the cerebral cortex. This allows the migration of white blood cells and the transudation of serum into the cerebrospinal spaces. This especially occurs in non-capsulated abscesses, and in those in which there are no limiting meningeal adhesions. In abscesses of the brain substance other factors may be responsible for the leucocytosis and increase of spinal fluid. If the abscess approaches the lateral ventricle—all located in the temporo-sphenoidal lobe are almost of necessity in proximity to the ventricle—the above process may affect primarily the fluid within this cavity, and secondarily the general cerebrospinal fluid through the canal system of the ventricles, viz.: from the lateral through the foramen of Monroe to the third, the aqueduct of Sylvius to the fourth, and out through the foramen of Majendie. It is possible that the abscess itself may produce an effect upon the choroid plexus in the ventricle of the side involved, and as these structures are connected with the production of the cerebrospinal fluid, it is not unreasonable to suppose that this sort of involvement of the ependyma might result in the increase of the fluid, perhaps also in the amount of its cellular constituent.

A cerebellar abscess may cause sufficient pressure upon the posterior part of this system to prevent the drainage of the lateral ventricles, thus producing a sort of internal hydrocephalus. In one patient, in whom the symptoms were obscure but evidently

pointed to a brain abscess, exploration of the temporo-sphenoidal lobe gave exit to fluid under marked pressure, the ventricle being entered at much less depth than normal. This led to the recognition of the location of the primary process and the evacuation of a cerebellar abscess.

In inflammation adjacent to and involving the external layers of the dura, which later extend to the meninges, there is often a stage of varying length, while the products of inflammation are escaping into the subdural space, which antedates the invasion of this space by the bacteria causing the process. In this stage there may be found in the spinal fluid the serum globulins in abnormal amount, or besides these in increased leucocytosis. Meningitis recognized in this stage responds to treatment.

The labyrinth offers the most frequently travelled route for infection from the middle ear to the meninges.

Some Points in the Diagnosis of Syphilis of the Nervous System.—James H. Lloyd, *Archives of Diagnosis*, 1918, Vol. XI, p. 57, states that the question sometimes arises whether it is ever possible or justifiable to base a diagnosis of nerve syphilis on one symptom alone. This question is perhaps most likely to arise where the iris is found involved, or again when the reflexes, particularly the knee jerks, or the Achilles reflexes, are affected. Is there such a thing as monosymptomatic tabes, in which, for instance, nothing is observed but an Argyll-Robertson pupil? Such a thing in a patient with a clean history of syphilis, and positive (or even negative) laboratory reports, would raise a large question in the mind of a neurologist. The cases of cerebrospinal syphilis seen at Blockley during the past winter indicate that pupillary changes are very common, although these changes are not all of the Argyll-Robertson type. The pupils in some cases are sluggish both to light and accommodation the type known as ophthalmoplegia interna. Along with this there may be inequality or irregularity, dilatation or contraction. His experience at Blockley would lead the author to believe that the type known as ophthalmoplegia interna, or something approaching it is one of the most common of the ocular disorders. Various forms of ophthalmoplegia externa may occur in syphilis, as is well known, either in tabes or in the cerebrospinal form. As early isolated or prodromal symptoms, they are especially important. Progressive ophthalmoplegia has usually been held to indicate a central or nuclear origin, but it may possibly be due also, in some cases, to involvement of the nerve trunks in a syphilitic meningitis. It would not do, however, to deny the possibility, in other cases, of nuclear involvement due to endarteritis of the vessels supplying the nucleus. Primary optic atrophy, progressing to complete blindness, may appear in syphilitics. Of other cranial nerves the acoustic especially should receive attention, since a slight degree of deafness is to be detected very early. Preservation of the knee jerks and Achilles reflexes is not incompatible with a diagnosis of early or incipient tabes. It is difficult, or even impossible, in hospital practice to determine the exact time of the disappearance of the knee jerks in tabes. In the great majority of cases they have disappeared before the patient's admission This is true also of the Achilles reflexes. Hence physicians fall into the way of assuming that their very early disappearance is a uniform rule; or that without the loss of the knee jerks there can be no tabes. But, as already said, tabetic symptoms in the pupils have sometimes been observed for a period of years before the reflexes were lost and the disease frankly declared itself. Nevertheless, such cases are very rare. The tendency today is to ascribe system diseases of the cord—even locomotor ataxia—to an essential meningitis, as Nageotto and others have claimed; but there is good authority for believing that this is not always so, and that the original seat of the lesion may be in the tracts, or the neurones themselves. There is, for instance, as already pointed out, a primary optic atrophy, but whether this is due to an original infection of the membranes, as some hold, is not yet fully demonstrated. Anyhow, these rather rare forms of lateral sclerosis

present the clinical picture of a system disease existing in the lateral tracts, very much as tabes is a system disease of the posterior columns. In the absence of post mortem studies, which were not available in that series of cases, the writer can not indulge in dogmatic statements as to a meningitis; but the clinical type is one which is undoubtedly to be seen in syphilis of the nervous system. This fact suggests also the possibility that amyotrophic lateral sclerosis may, in some cases at least, be a form of spinal syphilis. Whatever the exact pathology may be—whether a peripheral neuritis, a meningitis about the roots, a poliomyelitis or a degeneration of neurones—the fact is apparent that syphilitic infection may cause a high grade of muscular atrophy. It has yet to be determined whether such muscular atrophy, due to syphilis, may occur in nontabetic cases, and whether muscular atrophy may constitute the whole clinical picture. We are bound to keep an open mind still as to the possible ravages of syphilis in the nervous system, for it is by no means clear that all clinical manifestations of the disease have yet been recognized. There seems to be no reason to suppose that the spirochetes may not invade exclusively that portion of the cord and nerves which we speak of as the neuromuscular portion, in other words, the motor neurones and the enveloping membranes of the anterior roots. Finally it is well to call attention here to the possibility of grave errors in diagnosis, especially by surgeons, in early or marked forms of tabes. Such errors consist usually in mistaking tabetic crises for the signs of surgical disease in some one or other of the abdominal organs.—*American Journal of Syphilis.*

Fissured Tongue as a Sign of Syphilis.—Dr. Gaucher, *Annales des Maladies Vener*, June, 1917, recognizes, in addition to the already described plicated or "scrotal" tongue of congenital syphilis, a less conspicuous condition in which the tongue shows merely a number of shallow fissures, the result of a mild grade of poisoning by syphilitic toxins. While often manifested in congenital syphilis, this condition is at least as frequently seen in acquired syphilis. In the congenital cases it is at times accompanied by other lingual changes of like origin, such as leucoplakia or geographical tongue, as well as by various other dystrophic manifestations, in particular an abnormal spacing of the median superior incisors. The characteristic tongue fissures are best seen when the papillae are smoothed down to the lingual surface by passage of the finger over the latter. The median fissure usually present is merely the normal medial furrow in an exaggerated form; but there are also irregularly distributed lateral fissures, some running into the median fissure and others independent of it, some straight and others curved. As a whole they run longitudinally, but may run transversely or obliquely. The fissures at the margins of the tongue are generally the deepest. There is no subjective disturbance, save exceptionally a slight tingling of the tongue upon ingestion of spiced foods or acid fluids. The condition is a certain indication of acquired or inherited syphilis.—*American Journal of Syphilis.*

NEURO-PATHOLOGY.

The Vibrating Sensation in the Differential Diagnosis of Affections of the Spinal Cord and Peripheral Nerves.—Williamson, *The London Lancet*, calls attention to the value of the vibrating sensation in the differential diagnosis of affections of the spinal cord and peripheral nerves from hysteria, functional diseases and malingering.

He tests the vibrating sensation by a large vibrating tuning fork, the foot of which is placed on a subcutaneous bony surface, such as the malleoli, the inner surface of the tibia in the leg, the anterior superior iliac spine, the styloid process of the ulna at the wrist, the sternum, etc.

Loss of vibrating sensation is often one of the earliest signs of sensory affection

in lesions of the spinal cord. It is often lost before other forms of sensation are affected.

In the differential diagnosis of organic paraplegia from hysteria, functional disease, and malingering, he calls attention to the following point. In any case of paralysis or paresis of the legs, if the vibrating sensation is lost, while other forms of sensation are recognized, and the patient persists in this statement in spite of suggestions to the contrary, malingering or hysteria is very improbable. In malingering or hysteria, if sensation is affected, the vibrating sensation and other forms of sensation will usually be lost together.

Vibrating sensation has been lost in cases of spinal disease which have come under the author's observation that were probably due to combined postero-lateral degeneration and lost at a very early stage before other forms of sensation had been lost. He quotes the case of a man called for military service in 1917. The patient stated that he considered himself unfitted for military service because of a weakness or heaviness in his legs and slight unsteadiness in walking could have been attributed to neurasthenia or malingering but for two signs. The knee-jerks were normal; no ankle clonus could be obtained; and the only definite sign of organic disease was the loss of vibrating sensation on the legs and the change in the plantar reflex. Six months later he showed well-marked signs of organic disease.

Williamson calls attention to the value of testing the vibrating sensation in the numerous cases of lesions of the cord and peripheral nerves now coming under observation in military practice.—*Charlotte Med. Jour.*

Pathogenesis of Anxiety as a Nervous Symptom.—Lepold-Levi, *Presse Medicale*, considers nervous anxiety a bulbar manifestation, the center presiding over which —"the safety center"—corresponds to the points of origin of the vago-sympathetic nerve distribution in the medulla More or less predisposed to react to influences of variable nature, this center is made sensitive by ductless gland secretions, especially those of the ovaries, adrenals, and thyroid, the last in paritcular. Attention is called to the frequency with which symptoms denoting thyroid instability occur among subjects troubled with anxiety, to the presence of anxiety in exophthalmic and endogenous goitres, and to the appearance of anxiety as a result of thyroid feeding. Small doses of thyroid substance, administered on the basis of these views in appropriate cases, completely transformed the condition of a large number of patients.—*Charlotte Med. Jour.*

NEURO-SYMPTOMATOLOGY.

The Static Labyrinth in Syphilis.—J. W. Downey, Jr., *Transactions American Otological Society*, 1917, Vol. XXIV, Part 2, writes that in a large proportion of syphilitic cases both divisions of the eighth nerve will be affected and, therefore, both the auditory and static labyrinth should be tested. Patients with acoustic neuritis of syphilis may hear the voice surprisingly well and may not complain of deafness until questioned; the tuning forks, therefore, offer the best means of correct diagnosis. The typical hearing defect is a shortening of the duration of perception by bone conduction, out of all proportion to the shortening of the duration of perception for the same fork by air conduction, the retention of good hearing for the low forks, with a loss of perception, or a reduction in duration of perception, for sounds of high pitch. As regards the static labyrinth the most characteristic reaction of syphilitic internal ear disease is a lowering and confusion of all the responses and this may vary from a totally dead labyrinth giving no responses to the cases showing all the normal

reactions reduced in degree. Vertigo is absent or it lasts but a few seconds. Falling is not definite. The patient, if tested quickly after rotation, will past-point with one arm but not with the other, or will only past-point for a few inches or will past-point incorrectly. The responses may be intensified by increasing the stimulation; thus, nystagmus may be absent after ten turns in twenty seconds, but may become evident for a few seconds after ten turns in ten seconds. With the cold caloric test it may require much colder water to bring out the response. Furthermore, it is apparently possible in these cases for one semicircular canal of the same ear to be more affected than the others, hence, we may get normal responses from rotation with the head in the upright position (horizontal canals) and abnormal reactions with the head forward (vertical canals) and vice versa. On the other hand, there may be increased irritability of the static labyrinth, evidenced by prolonged nystagmus, marked vertigo, and nausea. There may be crossed past-pointing, right arm to the left and left arm to the right, after turning to the right, and *vice versa*, as well as reversal of past-pointing (both arms to the left after turning to the right, and both arms to the right after turning to the left). The reactions in most instances point to the ear which is most involved and one ear is usually involved to a greater degree than the other, though both as a rule are implicated.—*American Journal of Syphilis.*

NEURO-THERAPY.

A Note on the Treatment of Neurosyphilis.—J. B. Gooken, *American Journal of Syphilis*, October, 1918, argues that there is a lack of confidence in the constitutional treatment of syphilis as a means of combating a syphilis which attacks the central nervous system, because of the avidity with which intraspinous therapy was taken up in the hope that it offered something better. Sufficient time has elapsed to have given intraspinous therapy a thorough trial, and today we find the medical profession divided as to its efficacy. On both sides are men whose extensive experience and wisdom must inspire respect for their views. One can but study and weigh these observations, concluding in his own mind as to which he will follow. The ultimate decision should be guided by hypothetically placing oneself in the position of the patient; as a medical man, with full knowledge of the consequences which may be expected from syphilis which has invaded the cerebrospinal tract, and the results to be expected from systemic or intraspinous therapy, to which treatment would he submit? Having made a choice, it is a duty to endeavor to improve that method of treatment to its greatest efficiency.

One factor which has seemed to stand against systemic treatment as a means of alleviating neurosyphilis is the apparently small amount of medication which reaches the cerebrospinal canal when administered in this way. Apparently the neurocanal is a discrete and isolated part of the anatomy in this regard, protected against medicinal invasion, so far as the spinal fluid shows, quite as thoroughly as its thick bony wall protects against external forces. Also, the exchange of secretions is normally quite inhibited. Undoubtedly this led to the adoption of the more direct therapy.

Recovery in infectious diseases, including syphilis, is accomplished through a process of active immunization. This property resides in the body or blood; the spinal canal can be assumed to possess no inherent quality of antibody formation. Therefore such influences must reach it from the blood—a route presenting a formidable barrier. Witness a generalized syphilis becoming latent, of itself or with little treatment, as compared with the progressiveness of neurosyphilis, often in spite of strenuous and continued general treatment.

The origin of any benefits from the Swift-Ellis treatment of cerebrospinal syphilis

has been a matter of debate. It has been pointed out that the serum introduced by this method brings to the cerebrospinal canal an arsenic content far below a spirocheticidal concentration. It must be remembered, however, that this serum follows an intravenous administration of arsenic and contains the products aroused in the blood thereby. Also, that the treatment is carried on, in many cases, where that quality of the blood which had once shown a positive Wassermann test has become negative, and this quality is introduced intraspinally. Further, that cerebrospinal fluid containing the toxic products engendered by spirochetes and having no other means of escape is removed mechanically.

Another source of benefit may perhaps be attributed to Flexner's theory that, "All sera introduced into the subarachnoid spaces act as foreign bodies, and if sterile give rise to aseptic inflammation. If this supposition is founded on fact, we might view the inflammatory conditions occurring in the meninges, which increase their permeability to circulating proteins otherwise excluded, as beneficial; and from this it may follow that any advantage actually shown to be derived from the intraspinal administration of normal human or horse serum may be the result not of the effects of the serum as such, but of a further increase in this permeability."

The manifestations of cerebrospinal syphilis are due more to the toxic products produced by the spirochete than to the presence of the spirochete *per se*. To the retarded entrance of immunity bodies into the cerebrospinal canal might be added that when this does take place these antibodies are not specific against those toxins which it is desired be rendered innocuous. Toxins vary with the composition of the culture media upon which they are elaborated. It is known in the production of antitoxin that variation of the culture media will produce a toxin, which while toxic of itself, will not generate an antitoxin specific for the toxin produced by the microorganism in the living host. In syphilis, it could be assumed that the toxin elaborated in the peculiar constituents of the cerebrospinal tract differs from the toxin formed in somatic syphilis. Also that the antibodies produced against a systemic syphilis are not specific against a "nerve-derived toxin." Neither, as has been stated, does the cerebrospinal tract possess the property of generating immune bodies.

For this reason the intravenous introduction of spinal fluid is advocated: That is, it will stimulate the production by the blood of antibodies specific against the peculiar toxin which the spinal fluid contains. A positive chemotaxis toward the spinal canal will be created, carrying with it these antibodies, and their entrance into the spinal canal will be enhanced by the increased permeability of the meninges, brought about by an aseptic inflammation caused by the Swift-Ellis treatment being instituted at the same time.

The following is the method adopted: Daily inunctions of mercury are given during the entire course of the treatment. At the end of 15 days this is supplemented by weekly Swift-Ellis treatments, adding to the salvarsanized serum just before inactivation, 1-50 grain of mercury benzoate, dissolved in 1 c.c. of physiologic salt solution (Lautman method). Immediately after the serum is introduced into the spinal canal, the spinal fluid which has been withdrawn is injected intravenously.

By this method is exhibited all the advantages claimed for the intensive mercurial and salvarsan systemic treatment; the intraspinous introduction of mercury salts; the Swift-Ellis treatment; and those biologic advantages which might accrue from the intravenous injection of spinal fluid. This latter advantage is, of course, conjectural, as there has been no opportunity to reach definite conclusions by experiment. It does, however, give promise that such investigation might be profitably conducted.

While only a small number of cases have been treated in this way, a thorough and complete laboratory study of the spinal fluid has shown that in this light at least the results were equal to that accomplished by twice the number of Swift-Ellis or mercury benzoate treatments. For instance, comparing findings in this method with those

of the previous methods, it was found that by this method three treatments gave a laboratory improvement equivalent to that of six of the other treatments mentioned.

The reactions have seemed less severe than those attending the other methods. It would be expected that adding a mercurial salt to a salvarsanized serum would increase the irritant constituents, causing a proportionately more vigorous reaction, but this has not been found true. Probably mercury and arsenic each have a selective action in the spinal canal and the combination of both is not equivalent to an increase in either salt in this regard.

Clinically, the few cases so treated, have lent encouragement to further use and observation of this method of treatment.

The intravenous injection of a spinal fluid having a four-plus Wassermann test has not been found to influence a negative blood Wassermann.

THE TREATMENT OF WAR NEUROSES.—Sir James Purves Stewart, *Archives of Neurology and Psychiatry*, January, 1919, after a few general instructions as to the scope of the examination which should include the anamnesis, as well as a thorough methodical physical exploration, to enable the physician to make an accurate diagnosis —fundamentally important, offers a few general maxims for the successful treatments of these neuroses, foremost amongst which is the beneficial effect a thorough investigation has upon the patient.

The personality of the physician is an essential factor for successful treatment. The physician should exercise authority over his patient, firmly, quietly and with imperturbable good temper, and should not resort to harshness or empty painful stimulation as a vehicle of curative suggestions, as often done; he should endeavor to secure the patient's confidence and good will, which, except in cases of malingering, is not usually difficult. The patient's co-operation should be secured through the educational method of psychotherapy.

The patient should be placed in an entirely changed environment—preferably in a specially arranged hospital, under the care of a skilled neurologist and a staff of specially trained medical officers, orderlies and nurses.

The confirmed neurotic, or "hospital bird," who has wandered from one institution to another, gathering pearls of clinical symptomatology by the way, or, in other words, learning new tricks, is much more refractory to treatment than the recent patient who has not yet been examined or treated. The "hospital bird" tends also to have a considerable superadded element of malingering, which helps him to play his part with added gusto, whether to bored or to sympathetic audiences.

After-Treatment.—The return of the patient to his own home should, as a rule, be postponed until the cure is practically complete. Visits by the patient's relatives or friends, restricted to a few minutes' duration, should be cut down to the minimum, and in most cases, after a single first meeting, should be forbidden, until a certain degree of improvement has been attained. Correspondence should also be discouraged. The patient should be reassured by the promise that any urgent home facts will be duly communicated to him, not directly but through the physician. Even when, at a later stage, visitors are allowed, each friend or relative should be scrupulously warned as to the importance of the atmosphere of encouragement, and should only be admitted to visit the patient on the clear understanding that such an atmosphere will be maintained.

Symptoms which have been produced mainly by emotional shock or by suggestion are to be treated chiefly by psychical methods; those due to physical concussion or to exhaustion chiefly by physical remedies, such as rest, massage, diet, electricity, etc. Those due to intoxications are the cases in which drugs are most likely to be of value in combating individual symptoms, such as tachycardia, insomnia, etc. Other cases may reequire to be transferred for treatment to a mental hospital.

After the first few days usually occupied by absolute rest in bed, there should be a carefully arranged program of rest, with gradually increased recreation from games and amusements, and work, assigning certain duties to be performed in or about the hospital.

In each case of hysteria, after careful examination and secure establishment of the diagnosis, a careful plan of treatment is to be selected for that case. The tactics of this campaign, which should be "short, sharp and decisive," will vary with each individual case, according to the patient's mentality and according to his special symptoms, for example, paralysis, contracture, tremor, etc.

The hysterical symptom was originally induced by suggestion, whether from the patient himself or from outsiders, and it has now to be removed by counter suggestion on the part of the physician and his staff. This is begun by confidently assuring the patient that he is curable; he is asked frankly whether he is willing to get well. He is then promised that his cure will begin at the very next interview. If this cannot take place immediately, it is often prudent, while awaiting the crucial moment, to isolate the patient in a room by himself, for not more than a day or two, leaving the recollection of the first interview with its careful examination and promise of cure, to incubate in his mind. In the meantime, during this preliminary period of expectation, his sleep and general bodily functions must be carefully attended to.

After this short preliminary period of isolation and expectation—a period which in favorable cases may be omitted, especially in patients of higher grade mentality—the crucial interview of curative counter suggestion, which should not take place in the presence of other patients, but in a special room for the purpose is begun and must never be allowed to end without achieving some visible improvement, demonstrated to the patient himself.

Some cases yield rapidly to counter suggestions, others may require an hour or more. For the curative interview no hard and fast rules can be laid down. It is essentially a contest between the physician's personality and that of the hysterical patient.

In case of a hysterical paralysis of a limb, the physician explains in clear, non-technical language how the weakness has been produced by undue concentration of the patient's mind on this particular limb, which, perhaps, had originally been injured. He is shown that the apparent paralysis is not due to any real want of power, either in the muscles or nerves. This is usefully supplemented by brisk faradic stimulation of the affected muscles, thereby demonstrating to the patient that he really can move it. It is further explained that owing to his emotional shock, his brain has temporarily got out of the habit of using the affected nerves and muscles, but now the muscles can and do contract, under the influence of faradism; and that his own will power directed to the same muscles, will also produce the same effect. He is "encouraged" to move the paralyzed limb, aided at first by faradic stimulation applied to the "motor points"; when he begins to perform voluntary movements, stimulation is continued, but no longer on the motor points, until the patient is convinced that he is performing the movements independently of electrical stimulation. Often a single interview of this sort is enough to restore the motor power which the patient had believed to be lost.

In cases of hysterical contracture, which not uncommonly accompany hysterical paralysis, while explaining his case to the patient, the contracted joint or joints are passively moved, thereby adhesions are broken down and the stiffened muscles are stretched and rendered more supple. Passive movements are supplemented by electrical stimulation of the muscles, and the patient encouraged to co-operate by voluntary efforts. Thus the patient tends subconsciously to perform some movement of the paralyzed limb.

Hysterical tremor is best treated by repeated passive movements, lasting half an hour, an hour, or longer, accompanied by verbal suggestions, until the muscles have become relaxed. The patient is then encouraged to perform voluntary movements.

It is important to persevere with the curative seance until cure is complete, rather than break off with only a partial cure. In any case the curative interview is never concluded without achieving a definite improvement which is visible to the patient himself and to his entourage.

Special splints or supports should be avoided; they are positively harmful, since they tend to perpetuate in the patient's mind the suggestion of disability. Splints and other apparatus, originally applied for the maintenance of correct posture for an organic lesion of nerves or other structures, may subsequently come to exercise a baneful suggestive effect, so that by the time the surgical injury is healed, the patient has lost the habit of using the muscles, so that a hysterical paralysis has become superimposed on an organic injury. The supporting apparatus is now a hindrance to complete recovery and the patient will carry about his crutch or splint indefinitely until by counter suggestion and re-education he learns that it is useless. He then discards it, whether on the floor of the physician's consulting room or on the wall of some patron saint's chapel, as the case may be.

Hypnotism is rarely necessary and has been discarded by most neurologists. It is open to the objection that the phenomena of the hypnotic trance are essentially hysterical in character, so that by hypnotizing a hysterical patient we are replacing one hysterical condition by another. It may be said that it is better for a patient to be hypnotically capable of movement than hysterically paralyzed. Clinical experience, however, demonstrates that waking suggestions are just as efficacious as those achieved by hypnosis, and their effects are more likely to be permanent.

In cases of obstinate motor disability, and in hysterical mutism, it is sometimes advantageous to give the patient a general anesthetic, to the extent of producing a transient mental confusion. During this stage of intoxication the patient often begins to talk or moves energetically his previously paralyzed limb. As he comes out from the anesthetic he is made to go on moving the limb, until he wakes up and finds himself carrying out free voluntary movements. Hysterical deafness is often similarly cured, if associated with vigorous conversation as the patient is coming round, perhaps combined with a touch behind the pinna with a hot Paquelin cautery, so as to concentrate his attention on the affected ear. Hysterical stammering is more difficult to cure than mutism. A considerable proportion of cases give a history of stammering in childhood. For such, prolonged treatment may be necessary, since the stammer in such patients is one of the stigmata of a congenital psychasthenia. Hysterical blindness is often cured by the familiar device of placing a plane lens in front of the alleged blind eye and a strong *plus* lens in front of the good eye, so strong that the patient cannot possibly see through it; or we may drop a mydriatic such as homatropin into the sound eye. The patient reads, unconscious that he is reading with his supposed blind eye. Once he realizes this fact, cure rapidly ensues.

Neurasthenia cannot be relieved by suggestion alone, although encouraging suggestions will hasten the process of convalescence. For this rest in bed for a month or longer, combined, in severe cases, with isolation, and in all cases with an abundant diet and general massage, as in the ordinary "rest cure."

Anxiety neuroses following incidents of war require careful study, with analysis of each individual case. They are best treated by isolation, rest in bed, attention to sleep, psychical analysis (not in the narrow Freudian sense) and by encouraging suggestions and re-education; analysis of the mental content, inclusive sometimes of dream analysis which may require long and patient conversations, in which various threads of association in the patient's mind are followed up. Such analyses often have their beneficial effect not merely owing to the "mental katharsis" but still more from the self-knowledge which the patient thus attains, a self-knowledge which brings with it self-control.

In all war neuroses, an atmosphere of confidence and cheerfulness on the part

of the medical officer and his staff exercises a profound and beneficial influence on the patient. This is effected by the conscious suggestions imprinted on the patient as well as by the development of a happy, "emotional" feeling tone, entirely reflex and subconscious, exercised through the vegetative nervous system and the endocrine glands.

SERUM TREATMENT FOR HYPERTHYROIDISM.—Beebe, *Interstate Medical Journal*, states that the medical treatment of hyperthyroidism, to be successful, requires a careful study of each patient. A simple diagnosis followed by the more or less perfunctory injection of antithyroid serum will in a small percentage of cases be followed by favorable relief, but to restore the patient to complete good health requires a careful analysis of the conditions in each individual. The degree to which each individual patient is subjected to these measures is a matter that can be determined only by the individual conditions in each case.

1. Rest; physical, mental, emotional.
2. Diet; rigid meat-free diet, and exclusion of all forms of stimulation, such as tea, coffee and alcoholics.
3. Administration of antithyroid serum.
4. Clearing up of all chronic affections.
5. Maintenance of hygienic conditions of the intestinal tract.
6. The judicious administration of small doses of iodine, always in the form of potassium iodide. This agent is not indicated in all cases, and is used only when the intense activity has been controlled.
7. The proper use at the right period of the treatment of suitable doses of X-ray.
8. The administration of neutral hydrobromide of quinine in a small percentage of patients during the later periods of treatment.

The administration of antithyroid serum is an essential part of the program. Its therapeutic usefulness and its entire harmless effects, when properly administered, have been demonstrated in so conclusive a fashion that it deserves a recognition which the large economic and social importance of hyperthyroidism justifies.—*Medical Standard.*

CURE OF A SYPHILITIC MENINGITIS BY ARSPHENAMINE AND MERCURY.—Irving M. Snow, *American Journal of Diseases of Children*, 1918, Vol. XVI, p. 163, reports a case in which neither the parents nor the child had any symptoms of syphilis, hereditary or acquired. A fall on the head acted as a provocative agent, causing cerebrospinal symptoms in a case of presumably latent hereditary syphilis. This, of course, is not unusual. The lesion in the cerebrospinal meninges was probably a proliferative gummous leptomeningitis involving the cortex and spinal meninges; also an ependymitis with an increase of cerebrospinal fluid and some hydrocephalus. The choked discs were due to intracranial pressure from fluid and not to a direct inflammation of the optic nerve. Optic neuritis is present in 40 per cent. of cases of cerebral syphilis. Ophthalmologists tell us that a high-grade choked disc is usually a simple edematous saturation and may exist without disturbance of vision or injury to the retina, subsiding under antisyphilitic treatment. If the process is allowed to progress, it may cause partial optic atrophy. In this case the course, increase and gravity of the brain symptoms were discovered and controlled by the oculist. Every case of supposed epilepsy should have the fundus and spinal fluid examined. The decompression and aspiration were followed by no immediate relief save that the lessening of intracranial pressure gave the cerebral circulation a little more freedom. The patient was very responsive to treatment: the acute symptoms lasted about three months. Mercurial inunctions were given every day for five months and arsphenamine at first every week; later every two weeks.—*American Journal of Syphilis.*

TREATMENT OF WAR PSYCHO-NEUROSES.—Major Hurst, *British Medical Journal*, in a cinematograph demonstration illustrating the essentials of treatment of soldiers and discharged soldiers suffering from functional nervous disorders, which illustrated the development of methods of treatment pursued, asserts that increased experience enables cures to be performed in a few hours or days in cases which formerly required weeks to completely eradicate all symptoms. This applies especially to hysterical paralysis, contractures, speech defects, such as mutism, aphonia and stammering, and tremors and tics.

Hypnotism is no longer used, and very rarely such adjuncts of suggestion as electricity or etherization; these are replaced with vigorous persuasion and manipulation, followed, when convalescent, by graduated interesting out-door employment, instead of lounging about the wards and corridors of large general hospitals.

BOOK REVIEWS.

AN INTRODUCTION TO NEUROLOGY. By C. Judson Herrick, Ph. D., Professor of Neurology in the University of Chicago. Second Edition, Reset. 12mo of 394 pages, 140 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Cloth, $2.00 net.

Although this is an introduction to the study of Neurology, it is not by any means to be understood as a primer in the general acceptation of that term, since it not only contains the fundamental principles and generally accepted facts, so far as known, relative to the anatomy, physiology and histology of the nervous system, but discusses, often in detail, various theories and hypotheses in the realm of the, as yet, unknown, if not unknowable.

Each chapter is closed with a summary which is valuable for fixing the essential facts in the mind, as well for future reference, and followed by a bibliography of the literature bearing upon the subject matter which is invaluable to those wishing to make a further—possibly exhaustive—study of the subject.—D. S. B.

AUTOBIOGRAPHY OF AN ANDROGYNE. By Earl Lind ("Ralph Werther"—"Jennie June"). Edited with introduction by Alfred W. Herzog, Ph.B., A.M., M.D., member of the New York and New Jersey Bar; Editor of the Medico-Legal Journal. Sold only by mail order to physicans, lawyers, legislators, psychologists and sociologists. Medico-Legal Journal, 123 West 83rd street, New York City, Publishers.

This work portrays the inner history and life experiences of a bisexual human; hence, treats of but one of the several forms of sexual perversion, and while it is essential that those for whom this volume is expressly intended should understand the various forms of perversion, and this is especially true of the physician who too often is not sufficiently informed on the subject, it does not appear necessary or desirable that a detailed description of the abhorrent practices of a single pervert be multiplied by a chronological review of a lifetime in order to enlighten the student on the subject; however, in order that the reader may obtain a correct conception of this work we shall permit the author and editor to "plead their own case."

The author's expressed object is "to bring his misfortune vividly before the medical and legal fraternities, for the purpose of lightening the heavy load which rested so unjustly upon the unfortunates of this class," while the editor offers the work "as a psycho-legal study, worthy of a careful analysis, from which only one conclusion can be reached, viz., such as he are not to be punished."

That the reader may form his own conclusion "unprejudiced," the reviewer "gives the case to the 'jury' without instructions."—D. S. B.

NERVE CONTROL AND HOW TO GAIN IT. By H. Addington Bruce. Author of "The Riddle of Personality," "Handicaps of Childhood," etc. Price, $1.00, net. Funk & Wagnalls Company, New York and London.

In presenting this work to the laity, the author's primary aim is that it be practicaly helpful to persons suffering from nervous invalidism, though by virtue of its teachings upon personal hygiene it should be useful to all.

To this end it is devoid of technicalities and written in an easy conversational manner.

It contains much of practical value; among which is a warning to the afflicted

against self diagnosis and the recommendation that he seek competent professional medical advice and take such medical treatment as the physician may prescribe. Nevertheless, there may be some disagreement as to the interpretation the lay reader may place upon certain chapters.

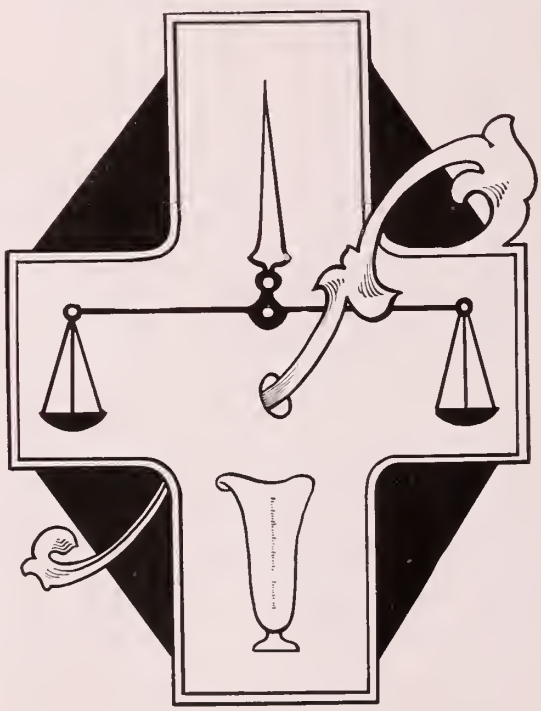
Though the author perpetuates the usual teaching as to the harmfulness of worry, he wisely warns that "it is equally true that a weakened physical organism makes for worry." Might he not have correctly added that the "weakened physical organism" is the primary element in the vicious circle?

A patient who had passed through a profound attack of psychasthenia and had occasion to consult the neurologist several times in the preceding fifteen years for early premonitory symptoms, observed that when, by reason of overstrain, she became "run down," she then worried about trifles or even about imaginary troubles. This observer had really discovered the exciting cause of her worry; the predisposing cause being the neuropathic diathesis; the worry simply perpetuating or intensifying the condition.

The same may be said of "hurry" which the author also discusses.

The author again wisely warns against the indiscriminate use of exercise, of which he properly says, "many need rest before they begin to exercise."

Considered in its entirety, this work appears more "safe and sane" than most works of this character, and the price places it in reach of all who are seriously interested.—D. S. B.



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THE HYPOPHYSIS CEREBRI.

By

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THE hypophysis cerebri is one of those bodily structures which because it forms an internal secretion is classed with the Endocrin Glands (Gr., endon, "within," and krinein, "to secrete" or "separate"). The endocrin glands are many and are evolved from every embryonic layer; ectoderm, mesoderm and entoderm produce them in almost equal number. Their multiplicity and diversity of origin suggest their wide biologic significance and probably indispensability to animal life (1). The Creator must value them highly: "He has made so many of them."

A whole group of endocrin glands is intimately associated with the nervous system and is of special interest to neurologists. Besides the hypophysis and pineal body, which are directly connected with the cerebrum, the medulla of the suprarenal body, the paraganglia of the sympathetic trunk, the chromaffin bodies of the abdominal sympathetic plexuses, the aortic bodies and the carotid bodies, all possess intimate associations with the visceral nervous system. In fact, the paraganglia, which are composed of chromaffin cells like the suprarenal medulla, distinguish the thoracico-lumbar part of the visceral nervous system (the sympathetic proper) from the cranio-sacral part (the autonomic system). This anatomic division of the visceral nervous system, in accordance with the presence or absence of paraganglia, is emphasized by the physiologic fact that the thoracico-lumbar system, which possesses paraganglia, is stimulated by adrenalin and the cranio-sacral system, which is destitute of paraganglia, is depressed by adrenalin. The hypophysis cerebri furnishes no such basis of classification as do the paraganglia; yet it is, nevertheless, a very important endocrin gland.

History.

The hypophysis cerebri was known in medieval times. In the year 1000 it was known to Avacenna the great Arabian physician, and with characteristic oriental metaphore he referred to it as the "rose beneath the cerebrum," the "hyp-rose." About 550 years later the less poetic Vesalius renamed it; believing that the nasal

discharges (the pituita) are secreted by the hypophysis, he called the organ "the pituitary gland" (1553). To Vesalius is due the old and almost universal obsession that nasal discharges are very detrimental to the brain. V. C. Schneider, in five voluminous volumes, published in 1640-42, proved conclusively that pituita is secreted by the nasal mucous membrane; but when we consider the retarded development of mentality and physique which accompany enlarged tonsils and adenoids, we are not surprised that the widespread belief in the deleterious effects of catarrh still obtains among the laity. The name Schneider is justly attached to the mucous membrane of the nose, because of this clear differentiation of its function from that of the hypophysis.

Samuel Thomas von Soemmering has the honor of conferring the modern name upon the "hyp-rose" of Avacenna. Considering it wholly an outgrowth of the cerebrum, he christened it in 1778 "the hypophysis cerebri" (Gr., hypo+physis—a down-growth or an under-growth of the cerebrum). Such was the accepted derivation of the gland down to the year 1838, when the epithelial evagination from the stomodeum, called Rathke's pouch, was discovered and described by Martin Heinrich Rathke. Today, though we know that only the small posterior lobe of the hypophysis originates from the cerebrum, the term "hypophysis cerebri" is scientifically accurate and sufficiently descriptive to satisfy the requirements of the BNA nomenclature.

The hypophysis is present in all craniata: every vertebrate possesses it except the amphioxus, and the neural lobe of amphioxus bears a strong resemblance to the hypophysis of all other vertebrates (1). There is some variation in structure and in the arrangement of the lobes in different animals. We find the neural lobe, which is posterior to the epithelial in man, in reptiles is located above the epithelial lobe (2). But in most animals the arrangement of lobes is similar to that present in man, viz., the neural or posterior lobe occupies the concavity of the kidney-shaped anterior lobe.

Origin.

Hypophysis:

1. Neural or posterior lobe.
2. Buccal, epithelial or anterior lobe.
   a. Intermediate or juxta-neural part.
   b. Distal part (the largest and most anterior part).

Two lobes of different structure indicate at least a twofold origin for the hypophysis. The neural lobe (pars neuralis), all agree, is derived from a brain vesicle, either the diencephalon or the telencephalon medium. Being a diverticulum from the floor of the telencephalon, it remains connected with the tuber cinereum in adult forms; and its cavity, which is persistent in the cat, is continued through the infundibulum into the aula of the third ventricle. The anterior lobe is derived very largely, if not wholly, from the buccal diverticulum of Rathke. This diverticulum extends backwards and upwards from the dorsal wall of the stomodeum, through the cranio-pharyngeal canal of the sphenoid proton, and becomes pinched off from the buccal wall; in the form of an ovoid sack, it is lodged below and anterior to the posterior, the neural lobe. Approaching the neural lobe, the buccal diverticulum is invaginated so as to fold about and embrace that lobe in its concavity. This invagination brings the dorsal and ventral walls of the buccal sack into close apposition, almost obliterating the lumen of the sack; the cavity still remaining is known as the "residual lumen." The dorsal wall of the sack because of its position and of its relation to the pars neuralis is called the "intermediate or juxta-neural part." The ventral wall of Rathke's pouch represents the "pars distalis" of the anterior lobe. Around the periphery of the sack the pars distalis and pars intermedia are continuous; but in median sections the two are almost completely separated by the residual lumen.

The stalk of Rathke's pouch probably forms the accessory pituitary gland

described by Haberfield (1909). It is found occasionally in the roof of the pharynx just behind the vomer, and may measure 5 m.m. in length.

The pars intermedia of many lower vertebrates (as cat, dog, rabbit, turtle, Mississippi alligator, etc.) includes a superior portion which invests the tuber cinereum around the base of the infundibulum (3). Tilney calls it the "pars tuberalis." The origin of the pars tuberalis, according to Baumgartner (2) and others, is from two lateral sprouts of Rathke's diverticulum, one on either side, which grow backwards, embracing the infundibulum, and fuse behind it. Though the pars tuberalis is a very definite structure in many lower forms, it has not been positively identified in man. In many lower animals, therefore, the pars intermedia comprises two definite parts: the pars tuberalis, investing the tuber cinereum; and the pars infundibularis, which is present in man and incloses within its concavity the neural lobe proper.

Thus far in our tracing of the genesis of the hypophysis it appears to be entirely ectodermal in origin, being made up of neural ectoderm from the endbrain (McMurrich) and buccal ectoderm from the stomodeum;* but the remarkable differences of cells and structures in the medulla and cortex of the pars ditalis strongly suggest a double origin for that part. The medulla of the pars distalis is largely made up of deeply staining acidophils, arranged in convoluted cords about broad blood channels, and the cortex is made up almost entirely of faintly staining basophils of very different arrangement.

When Rathke described the diverticulum bearing his name, in 1838, he considered it to be of entodermal origin; he believed that it originated below the bucco-pharyngeal membrane from the end of the fore-gut, that is from Seesal's pouch. Gőtte and Balfour traced the origin unmistakably to a point above the bucco-pharyngeal membrane and, hence, proved it must be ectodermal. Baumgartner (2) in his study of reptiles affords a plausible explanation of the diversified structure in the pars distalis. He describes a pair of lateral buds from the sides of Rathke's pouch which, in turtles and the Mississippi alligator, form the pars tuberalis and the cortex of the pars distalis; and, also, a media anterior bud from the same pouch which, together with the ventral wall of Rathke's pouch, forms the medulla of the pars distalis. The paired lateral diverticula and the single median, anterior diverticulum from Rathke's pouch are all definitely developed in the 20 mm. human embryo, according to Tilney (3). This embryology may explain the difference of structure in cortex and medulla and the presence of acidophils in the latter and of basophils in the former; but it seems not quite conclusive. Tilney, in his exhaustive memoir on the hypophysis cerebri, states that we cannot be positive that the anterior lobe is wholly ectodermal, and the studies of Kupffer in 1893, of Valenti in 1895, of Orru in 1900 and of Miller in 1917, point toward a partial or a complete entodermal origin for the pars distalis.

M. M. Miller studied the development of the pig (4). His investgations indicate that the medulla of the pars distalisis is an inclusion within the ventral wall of Rathke's diverticulum of a small evagination from the end of the foregut and is, therefore, entodermal. The evagination from the foregut, Miller believes, is the result of traction exerted by the notochord. Miller's work gives us a reasonable embryologic basis for diversity of structure in the medulla and cortex of the pars distalis; but it does not extend to the human hypophysis nor is it corroborated by the work of other investigators. On the other hand, the findings of Herring (1) in the cat, rabbit and chick are in opposition to the deduction of Miller. Herring denies that the notochord exercises any traction either on the alimentary or telencephalic wall and strongly maintains the total ectodermal origin of the whole hypophysis.

That the pars neuralis and pars intermedia are ectodermal in origin all agree.

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*Frederick Tilney classes the neural lobe with the diencephalon (1915. J. Comp Neurol., Vol. 25).

Whether the pars distalis is wholly ectodermal, or both ectodermal and entodermal, remains *sub judice* and must be decided by additional facts.

Before taking up the histology of the hypophysis, let us recur once more to its subdivisions:

I. Neural lobe, pars neuralis, posterior lobe:

1. Processus infundibuli (the main bulbous part of lobe).
2. Infundibulum (the stalk of the neural lobe joining it to the tuber cinereum).

II. Buccal, epithelial, glandular or anterior lobe:

1. Pars intermedia or juxta-neural part,
   a. Pars infundibularis (inferior).
   b. Pars tuberalis (superior).
2. Pars distalis (part anterior to residual lumen),
   a. Cortex.
   b. Medulla.

The human hypophysis measures 12-14 mm. transversely, 7 mm. from before backwards in the median plane, and, exclusive of the stalk of the neural lobe, it measures 5 mm. in vertical depth. Its form is that of an inverted "rose" (Avacenna) or mushroom, elongated transversely, the stem being represented by the infundibulum. Resting in the hypophyseal fossa, it is covered by the diaphragma sellae from which it receives its capsule, its connective tissue stroma and its blood-vessels.

Histology.

I. Pars Neuralis, the posterior lobe of the hypophysis.—The neural lobe of the human hypophysis is composed chiefly of ependyma and neuroglia cells, together with their processes. The ependyma, composed of fusiform cells, lines the embryonic cavity and in places is pushed out in cyst-like evaginations. Such evaginations completely honeycomb the neural lobe in low forms like the eel, garpike, alligator and chick (Tilney) (3); but they are not so numerous in man. They are lined with basophils and retain their communication with the cavity of the infundibulum. From the eighth month in utero the ependymal cysts contain colloid material. The same material fills the infundibular cavity and is discharged into the aula of the third ventricle. It may be inferred that the colloid contains the active principle of the neural lobe. The spider-shaped neuroglia cells of the neural lobe possess single, rarely double, nuclei; their cystoplasm is faintly granular and often pigmented. Besides the ependyma and neuroglia cells which belong genetically to the neural lobe, irregular cell-masses push into it from the pars intermedia (6). These extrinsic cells are basophils and were found by Tilney as early as the tenth week in utero. No acidophils are present in the neural lobe. Nonmedullated nerve fibers from the carotid plexus of the sympathetic enter the neural lobe; but it is doubtful whether there are any neurone bodies in it. Its blood supply is furnished by a single artery and is very scanty.

II. Pars Buccalis.—The buccal, epithelial, glandular or anterior lobe of the hypophysis surrounds the neural lobe "as a catcher's mit envelops a ball." The envelope is thin below and behind the neural lobe; but thick laterally and in front of it. The buccal lobe has two primary divisions: 1. Pars intermedia or pars juxta-neuralis, dorsal to the residual lumen; and, 2. Pars distalis, located ventral to the residual lumen. The pars intermedia is again divided into two parts—*a*, pars tuberalis, and *b*, pars infundibularis.

Pars Intermedia.—a. The pars tuberalis, the superior segment of the pars intermedia, invests the base of the neural lobe and covers the tuber cinereum. It is made up of deeply staining basophils of cuboidal shape, arranged in large, tubular acini filled with colloid material. The large acini formed by basophils, often in double row, are characteristic of the pars tuberalis. Cilia are frequently found on the lining basophils. The basophils possess large, deeply staining nuclei and scanty cytoplasm which stains readily only with basic dyes. The pars tuberalis is very vascular: large sinusoidal vessels intervene between the acini.

Pars Intermedia.—b. The pars infundibularis is the lower segment of the pars intermedia, that which invests the neural lobe proper. It is a dense stratum of faintly staining basophils, whose cytoplasm is more abundant than in the cells of the pars tuberalis. A very few small acini, lined with a single row of faint basophils, are present; they open into the residual lumen. Bud-like masses of basophils are thrust into the neural lobe, as stated above. The pars infundibularis is roughly divided into three basophilic zones: First, a single row of basophils lining the residual lumen; second, a zone several cells deep, containing cell-cords and a few acini; and, third, a zone, composed of one or two rows of basophils that immediately invests the neural lobe. Colloid material is present in the acini. According to Tilney, it first appears in the eight months fetus. Zone three, the epithelial investment of the neural lobe, has no blood-vessels, and the whole pars infundibularis has a very meager blood supply.

So we see that the entire intermediate part of the hypophysis is composed of basophilic cells—deeply staining in the pars tuberalis, where they form large acini, and faintly staining in the pars infundibularis, where they constitute a nearly solid stratum with few and small acini. A very meager blood supply in the latter and numerous, wide, thin-walled blood channels in the former are also characteristic of the respective subdivisions.

2. *Pars Distalis.*—The large anterior part of the buccal lobe, called the distal part, except around its periphery, is separated from the pars intermedia by the residual lumen of Rathke's pouch. This is much the largest part of the hypophysis. The pars distalis has a strong fibrous capsule derived from the diaphragma sellae; from the capsule trabeculae penetrate the parenchyma of the gland and carry into it the sinusoidal blood-vessels. According to its structure the parenchyma is divided into two zones, viz., a shallow peripheral zone, called the *corter*, and a large central zone, known as the *medulla*. The cortex is a thin stratum of cuboidal cells, two or three layers deep, almost every one of which is basophilic in its affinity. The great central zone, constituting the medulla of the pars distalis, is composed of convoluted and anastomosing cords of cuboidal cells separated by wide blood channels. The parietal cells, which form the surface of the cords, are large, granular, deeply staining acidophils (eosinophils); the axial cells, the deep cells of the convoluted cords, possess a smaller amount of cytoplasm than the parietal cells and the cytoplasm contains neutrophilic granules which have almost no color affinity. Hence, the latter are the chromophobic cells; the parietal are chromophilic cells (Flesch). The convoluted cords are separated by wide, freely communicating blood channels with very thin walls formed by one layer or endothelium.

The acidophils first make their appearance in the nine months fetus (Tilney) (3). They form a small patch in the interior of the pars distalis. The origin is unknown. Whether they are evolved from earlier basophils or are developed from an entodermal inclusion, derived from the fore-gut, remains to be determined. The double celled organ dates from the nine months fetus. During the first eight months of extra-uterine life the acidophils multiply rapidly, and the acidophils and basophils characterize the pars distalis throughout life. The acidophils are closely applied to the endothelial walls of the blood channels; they probably secrete into the blood stream. The

basophils are nowhere closely related to the blood-vessels; they bound the residual lumen, the acini and the cavity of the infundibulum, besides forming the cortex of the pars distalis. Hence, the basophils are related to the cavities containing colloid. These facts suggest different functions for the two varieties of cells and two methods of distributing their secretions: the basophilic secretion enters the lymph stream, chiefly the cerebrospinal fluid of the third ventricle; the acidophils pour their secretion into the blood stream.

In all craniata the buccal lobe is a double celled organ, being made up of basophils and acidophils. Such a classification of its cells, therefore, is more fundamental than the older one of Flesch, who divided them into chromophils and chromophobes, since the chromophobes are not found in fishes and lower reptiles. The chromophilous and non-chromophilous affinities refer only to the cytoplasm of the cells; the nuclei of all these cells stain readily and deeply.

Tilney distinguishes four cell-fields in the fully developed buccal lobe: 1. The pars intermedia, made up of faint basophils; 2, the cortex of the pars distalis, composed of faint basophils and a few deeply staining acidophils; 3, the central medulla of the pars distalis, containing deep and faint basophils and a few small clusters of acidophils; and, 4, the lateral projections of the medulla, composed of faint and deep acidophils. In the fully developed lobe there is, also, abundant connective tissue, and colloid material fills the residual lumen.

C. M. Vanderburgh (1917) reports the presence of columnar, ciliated cells in guinea pigs on the posterior wall of the residual lumen, and in the linings of the colloid cysts (12). We should anticipate the presence of such cells because of the derivation of the buccal lobe from epithelium that possesses cilia in its adult form. In man columnarciliated cells have been found on the posterior wall of the residual lumen by W. Sohier Bryant (13), by Gentes and others. They are not uniformly distributed, but are collected in spots like the maculae of the saccule and utricle. Bryant believes they are sensory cells. They lend some plausibility to the old hypothesis that the buccal lobe was once a sense organ.

Wm. H. F. Addison describes an interesting structure in both the basophils and acidophils of the pars distalis, viz., the Golgi apparatus (5). In the albino rat he found it to be circular or ovoid condensed spot, 3.8 mm. by 5.5 mm., located in the cytoplasm near the nucleus. The Golgi apparatus is larger in the basophils than in the acidophils, and was found to increase in size proportionately with the cells after castration. In other animals than the albino rat, and with other methods, the Golgi apparatus is revealed extending like a net through much of the cytoplasm of the cells (Kopsche, Gemelli and others). Its function is unknown.

Para-Hypophysis.

Mention should be made at this time of the small body discovered by Dandy and Goetsch (10) in 1911. It is a minute, button-shaped, epithelial body situated between layers of dura mater in the floor of the hypophyseal fossa, over a special pit in the body of the sphenoid bone. It was found in 80 per cent. of the dogs examined; but differed somewhat in size and structure. Basophils make it up, not an acidophil was found in it. The discoverers infer that the para-hypophis originates from Rathke's pouch. Its function is undetermined. Three arteries supply the para-hypophysis—one on either side from the internal carotid and a median posterior artery formed by the Y-like junction of two branches from arteries going to the neural lobe.

Blood Supply.

The blood supply of the hypophysis cerebri is not uniform (10). The neural lobe is very scantily supplied; while the buccal lobe, with the exception of the

pars infundibularis, is very vascular. The pars distalis and pars tuberalis contain many wide, sinusoidal blood channels, whose walls are composed of a single layer of endothelium. This endothelium alone separates the blood stream from the parietal acidophils. The blood is furnished by twenty to twenty-five very small branches of the arterial circle of Willis. These branches, which are barely visible to the naked eye, break up into capillaries before entering the buccal lobe; the capillaries expand into the sinusoidal channels which supply the pars distalis and, in the dog, the pars tuberalis, also; venous capillaries are then formed which converge to ten or twelve veins emptying into the basilar veins of the cerebrum. Some of these veins empty into transverse communications between the basilar veins. So the blood coming from the arterial circle is returned to a somewhat similar venous circle after supplying the buccal lobe.

The infundibulum receives blood both from the arteries to the buccal lobe and from arteries in the adjacent brain substance; but the main part of the neural lobe, the pars infundibuli, receives just one artery. That artery, which enters posteriorly, in formed by the Y-like junction of a symmetrical branch from each internal carotid. It penetrates to the center of the lobe, where it divides into radiating branches; near the surface of the lobe these branches form a rich capillary rete just beneath the epithelial investment; from the capillaries the veins pursue a reverse direction to the center of the lobe, and there form one principal vein and two or three small veins that empty into the circular sinus. The epithelial investment of the neural lobe has no blood-vessels whatever. Dandy and Goetsch have worked out the blood supply of the dog's hypophysis in great detail.

Nerve Supply.

The nerves of the hypophysis comes from the carotid plexus and its subdivisions on the anterior cerebral, anterior communicating and posterior communicating arteries (Dandy) (11). They accompany the arteries and, like them, are numerous in the pars distalis and very scarce in the posterior lobe. The pars intermedia receives one paired nerve from the carotid plexus and the pars neuralis several very delicate filaments. The fibers are nonmedullated. Their distribution within the gland has not been determined; but, inasmuch as stimulation of them causes increased glandular activity, we may regard them as secretory nerves (14). Faradic stimulation of the superior cervical ganglion of the sympathetic produces glycosuria (8). It causes the same effect after the spinal cord is cut above the origin of the splanchnics and the vago-sympathetic trunks in the neck are severed, together with all connections of the superior cervical ganglion except that with the carotid plexus; but, when the neural lobe is removed, stimulation of the superior cervical ganglion does not produce glycosuria.

The functional and physiological importance of the hypophysis must be reserved for a future article.

BIBLIOGRAPHY.

1. P. T. Herring, 1908. Development of the Mammalian Pituitary and Its Morphological Significance. *Quart. Jour. Expr. Physiol.*

2. E. A. Baumgartner, 1916. The Development of the Hypophysis in Reptiles. (Snakes, lizards, Mississippi alligator and turtles.) *Jour. Morph.*, Vol. XXVIII, December.

3. Frederick Tilney, 1911. A Contribution to the Study of the Hypophysis Cerebri with Special Reference to Its Comparative Histology. *Memoir No.* 2, Wistar Inst.

4. M. M. Miller, 1916. A Study of the Hypophysis of the Pig. *Anat. Rec.*, Vol. X, pp. 226-228.

5. Wm. H. F. Addison, 1917. The Golgi Apparatus in the Cells of the Distal Glandular Portion of the Hypophysis. (Albino rat.) *Anat. Rec.*, Vol. XI, pp. 317-318.

6. Wayne J. Atwell, 1917. On the Relations Between Neural and Intermediate Portions of the Hypophysis. (Rabbit.) *Anat. Rec.*, Vol. XI, pp. 322-323.

7. Reford and Cushing, 1909. Pituitary Gland Essential to Life. *Johns Hopkins Bull.*
8. Goetsch, Cushing and Jacobson, 1911. Carbohydrate Tolerance and the Posterior Lobe of the Hypophysis Cerebri. *Johns Hopkins Bull.*
9. Harvey Cushing, 1912. The Pituitary Body and Its Disorders. (A monograph.) Philadelphia.
10. Dandy and Goetsch, 1911. Blood Supply of the Pituitary Body. *Am. Jour. Anat.*, Vol. XI, January.
11. Walter E. Dandy, 1913. Nerve Supply of the Pituitary Gland. *Am. Jour. Anat.*, Vol. XV, November.
12. C. M. Vanderburgh, 1917. The Hypophysis of the Guinea Pig. *Anat. Rec.*, Vol. XII, No. 1.
13. W. Sohier Bryant, 1916. Sensory Elements in the Human Cerebral Hypophysis. *Anat. Rec.*, Vol. XI, No. 1.
14. Weed, Cushing and Jacobson, 1913. Further Studies on the Role of the Hypophysis in the Metabolism of Carbohydrates. *Johns Hopkins Bull.*

DELUSIONS AND HALLUCINATIONS.

Serving as Psychical Compensations for BIOLOGIC INEFFICIENCY.

By

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THE biological demands in man and the lower animals are those arising from the two main basic impulses; the impulse of hunger, serving the purpose of self-preservation, and the sex impulse, serving the purpose of procreation.

The entire complex activity of animal life, no matter at what stage of development, is directed towards the satisfaction of those two basic impulses, all others being subservient thereto.

Of the two, the sex impulse, serving the purpose of perpetuation of the species, appears to be the stronger, since we clearly see how nature frequently sacrifices the individual but is especially careful to preserve the species.

In attempting to satisfy its biological demands, the animal has to reckon with its environment and the various obstacles interposed thereby. The result is a struggle between the energy at the disposal of the animal and the forces of the environment antagonistic thereto.

This struggle has been going on ever since the inception of animal life. During it many perished, and only the stronger and the more adaptable ones survived. Through the long path of evolution various mechanisms of offense and defense were developed, permitting the animal to adapt itself to the environment, and, at the same time, changing or influencing it to such an extent as best to satisfy its biological demands.

The satisfaction of the hunger or sex impulse is accompanied by an "affect," or feeling of pleasure, while the inability to satisfy them resulted in an affect or feeling of displeasure, pain.

The feelings of pleasure or displeasure are due to certain physical phenomena such as dilatation of arterioles, decrease in pulse rate, deeper respiration, increased muscular power for pleasure and their opposites for displeasure. These physical phenomena take place reflexly. The intrinsic value of the affective states is that they serve the animal in his struggle for existence, since it is the affect of pleasure which attracts the organism to food and other objects necessary to the maintenance of its life or perpetuation of its species and it is the affect of displeasure or pain which repels the organism from danger.

The pleasure affect, then, becomes one of the chief aims of animal activity, since it represents the satisfaction of its biologic demands.

The difficulties and obstacles which were met during the path of animal evolution were always overcome by either of the two ways, flight or fight, each being accompanied by definite physical phenomena. As a result of fight, anger developed, and, as a result of flight, fear; and these, through phylogenetic associations, became accompanied by the same physical phenomena as fight and flight. Anger and fight are accompanied by dilatation of arterioles, decrease of pulse rate, deepened respiration, increased muscular power, while during fear and flight the opposite of the aforementioned are present.

Here we see that the physical phenomena accompanying fight are identical with those of pleasure, while those of flight, with pain, indicating that pleasure is the result of activities useful to the organism, fight, aims to overcome obstacles inimical to the organism's welfare; while displeasure, or pain, is the result of activities which are of no positive use to the organism, but which aim to remove the organism from anything harmful to *its* welfare; flight usually representing the failure on the part of the organism to overcome obstacles in its effort to satisfy its biologic demands, but also serving the purpose of removing the animal from danger.

Man represents the ultimate result of animal evolution and possesses more instruments of adaptation and integration than any other animal. He not only possesses such instruments as the reflex, the hormone and a most complex central nervous system which controls the action of the various organs of the body and correlates their activity for the good of the individual as a whole, but, through the psyche, carries with him the associations of all the experiences that have gone before—during his own life, his otogeny, and the life of his race, his phylogeny.

The psyche thus becomes the chief control of all human activities, since, through its knowledge of the past, it enables the individual more efficiently to adapt himself to his complex and multiform environment.

During his long struggle for existence, man found it to his best advantage to live as a social unit, since society granted him a certain amount of protection, preserving his accumulations in the form of food and shelter.

Becoming a social unit, however, he met with new difficulties, since in seeking to satisfy his biologic demands, he could no more regard what was best for him alone, but was forced to do it in a manner compatible with the welfare of society as a whole.

Society, on the other hand, found it to its interest to adopt certain customs, and so it became necessary for the individual, in order to be able to live in society and derive its benefits, to adapt himself to its demands, to subjugate his wishes and desires, and satisfy his affective cravings in a manner prescribed by the social custom.

This, however, was not easily accomplished. A struggle ensued, and here, also as at the lower stages of animal development, various defense mechanisms were evolved.

The adjustment and adaptation to the complex demands of civilized society is chiefly at the psychical level, the highest level of human adjustment and, hence, the struggle is chiefly at this level.

Throughout the long fight with its environment, every organism, from the lowest to the highest stage of development, tried to control as much of the environment as possible, to be master thereover, so to speak, constantly forcing upon that environment its own power, so that the aim, or will, to power developed, since the feeling of power afforded the organism the sense of security, thus enabling it to fight and overcome obstacles in the environment inimical to the securing of pleasure, which, in turn, represented the accomplishment of its biological demands.

In endeavoring to overcome the various obstacles met by man at the social level, the feeling of power was essential to him in order to keep up with the fight, and so the "Will to Power" became a motivating force in directing human behavior.

The overcoming of obstacles was represented in the psyche by a sense of pleasure, and, since the feeling of power was reflected through the psyche as the ability to overcome obstacles, it, through phylogenetic association, became accompanied by a sense of pleasure, giving man the sense of security and the feeling of ability to overcome difficulties. Psychical representation thus served man as a method of adjustment to his environment, since, through it, he recalled his previous experiences and was able to use the same methods of offense or defense. This, however, also gave rise to the indulgence in day dreams, phantasies, wishes, etc., and the individual indulging in them was able to secure pleasure because through psychical representation he perceived reality, not as it is, but in a way compatible with his fancies and desires, thus running away from

reality and using the method of flight instead of fight. Flight, however, is not always a good method of overcoming difficulties. Under many circumstances it does not serve the best purposes of the individual as a whole and must be considered pathological, and the meeting of the difficulties at the social level through psychical representation, day-dreams, phantasies and wishes often becomes pathological. However, at all times, they served a certain purpose, and represented a method of adjustment and adaptation to a difficulty.

In the field of purely physical pathology, certain phenomena like chills, fever, vomiting, etc., were considered pathological entities. Recent advances in pathology have demonstrated the fallacy of such a view, and these were found to be mechanisms of defense, which, the animal, during its long fight with the environment, established, and which, later on, became automatic. However, though beneficial to the body economy, if these are continued for too long a period, they can waste the energy of the individual, and, instead of saving the body, may cause exhaustion and death.

At the psychical level the same occurs. Delusions and hallucinations are only symptoms, they are defense mechanisms representing a constructive effort on the part of the individual to overcome certain difficulties met at the social level, and, as the symptoms at the lower levels, they too, if persisting for too long a period, or in too great intensity, become detrimental to the individual, destroying his efficiency as a social unit in civilized society and leading to exhaustion and death.

That the mechanisms of defense at the lower levels of animal efficiency, the physical, chemical, etc., appear with more constancy, and are more efficient, is due to the fact that their path of development has been a much longer one. Man has been living, comparatively, a very short time as a social unit, and, hence, the various mechanisms of defense and offense at this level cannot be so perfected and so efficient as at levels which have existed for eons of years.

The underlying principle, however, is the same.

Man must be considered as a reacting unit, constantly reacting, and, in turn, being reacted upon by his environment. He is a transmuter and transmitter of energy, and all his activities aim at one purpose, the better adjustment and adaptation to environment to satisfy his biologic demands.

Since the existence of society depends upon the integrity of the family-unit, involving the question of sex-relation, it is evident that man, as a social unit, will meet many obstacles in his attempt to satisfy his libido, or the biologic demands as represented by the sex impulse, should they happen to be contrary to the rules of the social custom.

The overcoming of such difficulties will have to take place at the psychical level, and, in either of the two ways; by fight the individual may endeavor to change the social custom or repress desires and wishes antagonistic to it; or, by flight, through psychical representation, he may either perceive the environment in a way compatible with his wishes or conceive himself the possessor of desires, wishes and inclinations approved by society.

The following two cases show, quite clearly, that delusions and hallucinations represent constructive efforts on the part of biologically inefficient individuals aiming to overcome obstacles interposed by the social custom.

Case I.

W. B. C., age twenty-nine years, single, a soldier, was admitted to Saint Elizabeth's Hospital.*

*This hospital was until recent years known as the Government Hospital for the Insane. He was mildly excited at the time, spoke somewhat excessively, in a circumstantial manner, was melodramatic in relating his troubles, but at all times relevant and coherent. He gave voice to delusions of persecutions, referable mainly to his company commander, Major X (formerly captain of a company, but since major of a battalion).

He stated that he served in the Army for about three years; that he was assigned to the Adjutant General's office and did such good work that the Adjutant recommended him for a commission. Major X, former company commander, did not want the patient to be in the Adjutant's office; but, since the Adjutant outranked him, the Major could not go against the Adjutant's orders, and he, therefore, took the spite out on the patient.

For two years, Major X persecuted the patient in all sorts of ways, he assigned him to the hardest kind of work, ordered him on various hikes, so as to take him away from the Adjutant's office, ordered him on night patrol while his feet were blistered, giving him only two minutes within which to comply, and refused patient's request for shoes when they popped out during a hike. When patient's father died, he tried to prevent him getting a furlough. On two occasions he prevented the patient receiving a commission. The climax came when the patient applied the second time for a commission, and this Major X, through two lieutenants, insinuated that the patient was a degenerate, a sadist and performed sexually perverse acts.

The family history was negative except for tuberculosis on the maternal side.

His personal history indicates that he was born under normal conditions, walked and talked at the usual age, was delicate as an infant and had convulsions before he was two years of age, finished common school, being skipped twice, finished high school, and attended a military academy for two years, having won a scholarship there; always had an excellent memory, enlisted in the army, in order to become an officer, previous to which he was a subscription agent, worked in a dental office, drug store and as a shipping clerk, had the usual diseases of childhood and typhoid fever but no venereal diseases.

Physical examination showed him to be a tall, thin, but well developed and nourished male, general physical and neurological examinations being negative.

Urinalysis was negative.

Wassermann reaction with blood serum, negative.

The *mental examination* showed that the patient was correctly oriented in all spheres. He was somewhat grandiose, made extravagant statements regarding his abilities, but, except for the delusions of persecution mentioned before, denied any delusions and hallucinations.

Memory for remote and recent events was excellent, all special memory tests were answered promptly and correctly, and all the intelligence tests, the Masselon, the Ziehen and the Finchk, were very well performed. He reproduced all stories correctly, was very well informed on current events and had a good fund of general information. He was alert and in touch with his environment, spoke very good English, and was apparently a well-read man, denying that he was insane and stating that after he was turned down for the commission he became somewhat depressed and was not able, physically, to perform his duties.

One of the physicians took pity on him and sent him to Ancon General Hospital. He did not like the ward there, and he made all sorts of noises so as to be sent to this hospital. He wanted to be in Washington so as to be able to bring the matter of his unjust treatment before the proper authorities. The military records which accompanied this patient showed that all the facts as related by the patient were correctly stated. He did work in the Adjutant's office, he was rejected twice upon applying for a commission, and Major X *was* the one who was really responsible for his rejection. The patient, however, gave the facts a delusional interpretation.

From the standpoint of the old descriptive form of psychiatry, here, then, was a case of a young man who suffered from delusions of persecution, delusions of reference, and was somewhat excessive and circumstantial in speech and melodramatic in actions. The diagnosis of either dementia precox, paranoid form, paranoid state, or manic depressive excitement, would be made, and here the case would rest.

Modern psychiatry does not rest here, however, but, as in the diagnosis of physical diseases, we are not satisfied with describing symptoms, as fever, cough, rapid pulse, etc., but look upon them as bodily reactions due to a definite cause, so in the field of mental diseases the same must be the case. We shall try then to study the case further to determine the causes of the mental symptoms and their value to the individual.

We shall first study in more detail the personal history of this patient in order to get an insight into conditions of environment which shaped the mental make-up of this individual. As a boy, he began to show peculiarities quite early. He had very few playmates, was left out of games by other boys, and liked to play with dolls. The boys in school used to call him "Miss Lizzie." He brooded a great deal, and became a deep thinker at an early age. He never had the "toggles" or change of voice like all boys, and his voice remained feminine. The voice characteristic was

a source of great annoyance to him throughout life, for whenever he would come in contact with new people they would make fun of him, laugh at his voice and call him a sissy, but, after a short time, they would usually change their minds about him as he would assert himself and show them that he was a *man*. He used to take all sorts of tablets for his voice as he always wanted to have a *man's* voice.

Since twelve years of age he suffered from periodical depression, occurring about once a year, varying in intensity but lasting, usually, from a few weeks to a few months. It was never necessary for him to be confined to an institution. He would remain at *home* and get well. During these periods he would get melancholy and could not interest himself in anything. He had a double personality. At one time he was the brightest man that ever was, at another he was the dullest.

His whole life has been one disappointment after another. He quit the military academy because he suffered from one of his "attacks" and could not keep up with the work. He stayed at *home* for three months and got well.

Though a man of good education, having a good command of the English language and being a good penman, his personal history shows a remarkable inefficiency and total lack of adaptation. He worked in a dental office for one year, studying dentistry, then in a drug store for one year. Attended a military academy for two years, then became a subscription agent. Worked in a cotton mill for several weeks, then went into the country and tried to cultivate land, afterward returning to subscription work. At twenty-five years of age he was a shipping clerk, which the patient considers his best job. Between the various changes of occupation he would usually spend several months *at home*. He tried to enlist in the navy but was rejected and finally joined the army.

In the army he got along well with the men, but, on account of his feminine voice, he had to demonstrate that he was a *man*. The officers used to refer to him as a "perfect lady."

His home life was exemplary. He belonged to a cultured and refined Southern family. His grandfather was a prominent Methodist minister, and he was brought up under a strong religious influence. One brother is an engineer, one sister a trained nurse. His family history, as stated previously, was negative, so far as it could be obtained from the patient and his brother.

Here, then, we have a man who has had the advantages of a good home and a good education. He shows no lack of intellectual development, his progress in school, his winning of a scholarship points to that. Nevertheless, his entire life shows a decided "inefficiency." His periods of depression, his constant changing of occupations indicate a serious conflict and a struggle which does not end successfully. In this case it is very evident that the deficiency is a biologic one. The patient is decidedly homosexual. He showed that in his speech and in his behavior from quite an early date and in the manner in which he met his difficulties later on. Whether the "homosexuality" in this case was wholly an acquired one or there was a congenital predisposition which was activated through faulty rearing could not be definitely brought out in this case.

Nothing in the study of this case, however, indicated any congenital predisposition. The family history was entirely negative, and, with the exception of one secondary sex characteristic, his feminine voice, the patient did not show, as far as could be determined, any other physical basis for his homosexuality. Whether the feminine voice was due to a congenital defect or was an entirely acquired condition remains open to question.

Freud,[2] though not absolutely denying the possibility of homosexuality being congenital, thinks that in the great majority of cases this condition can be traced to causes which occurred after birth.

Freud has shown that the sexual impulse does not appear suddenly, but is the

result of gradual development from early childhood culminating at puberty. This impulse, during its course of development, can be traced in relation to three definite periods: Sucking period, or autoerotic, during which various errogenous zones are developed; latent period, during which, by the help of education, mental forces later on appear as inhibitions to the sexual instinct and limit its course, such as disgust, the feeling of shame, the esthetic and moral standards of ideas. During this period, also, part of the sexual energies is diverted—sublimation. The reappearance of the sexual activity is determined by internal and external causes. The child is very early capable of choice of object. (Remembering that the sexual impulse consists of the sexual aim and object.) Premature sexual appetite is directed towards parents and nurses, and springs from the dependency of the child. During this period, the most harmless love affairs are not, however, without an erotic tinge. At this period the child is bi-sexual, being able to derive pleasure from either sex. All the peculiarities of the sexual activities during this period are stored up in the memory of the individual as the strongest impressions, and condition the development of his character and his future behavior later on. In order that the sexual impulse should travel along normal channels from puberty on, memories of various experiences and sensations during the second period which were detrimental to the development of the normal sexual impulse, must be entirely repressed. The repression, when incomplete, gives rise, after puberty, to various neuroses. Puberty—at this third period, the finding of an object is influenced by infantile inclination of the child towards his parents or foster parents, which is revived at puberty. Failure of the various sexual instincts developed during the first and second periods of childhood to amalgamate themselves and to establish the primacy of the genitals will result in inversions, or homosexuality. With the above brief resumé of the Freudian theory of homosexuality (3) in view we shall proceed to point out the various mechanisms in our own case which led to the development of the inversion. Up to two years of age the patient was rather sickly. This resulted in his mother's giving him a great deal of attention and care. When he survived this critical period, he became his mother's favorite. Up until nine years of age he was kept at *home* before being sent to school. He undoubtedly formed a very strong attachment to his mother, which resulted in his desire to imitate and resemble her. This is shown later in the patient's life by his constant returning home with the onset of his depressions. Being a favorite child, and remaining at home until nine years of age, resulted in his precociousness (4). He was a deep thinker, too serious for a *boy* of his age. Upon entering school he meets with his first difficulties, the strong mother attachment and his being the favorite child resulting in his being singled out invidiously in school. He was left out of the usual boys' plays which are so necessary for the development of the normal masculine impulse, was called "Miss Lizzie," and, therefore, became more seclusive, spending a great deal of time in brooding and directing his attention toward his own *ego*. (Narcissistic period.) The educational and religious influences helped him to divert his sexual energies, and he was able, for a time, to reach a certain degree of sublimation, though not without considerable conflict. (His periods of depression.) Reaching puberty, this conflict becomes greater. He has no interest in the opposite sex. He is already inverted and attracted by the same sex. He manages, however, to repress, probably only partially, his homosexual strivings. The environment, nevertheless, brings his conflict constantly to his attention. He struggles against it, and, as he expresses it, he is forced to assert himself and prove that he is a man. The sexual impotency (patient never had any heterosexual experience), the result of his homosexuality, is reflected in his psyche as a sense of inefficiency and insecurity. He has no power of perseverence. Notice his inability to adapt. His frequent and unsuccessful changes of employment. His frequent visits *home* whenever things go wrong, demonstrating what White calls the "reaction of the instinct of the

familiar"—the "safety motive" (5). His attempt to enter the navy, and later on being rejected, joining the army, is quite significant.

Here is an individual who is quite effeminate. He is partially aware of it, though he does not admit to himself the causes for the same. He is always annoyed because of his femininity, and is compelled to *assert* himself. It is logical that such a person should try to remain in a small city, do some clerical work, where he could be among a more or less refined class of people whose manners and refinement would not permt them to annoy him and constantly call his attention to his annoying defect, but, instead, he seeks to join the navy or the army, consisting of a more or less rough and poorly cultured class of people. He could not help knowing that he will be the butt of all jokes in the navy or army, but, nevertheless, he enlisted. Is this an act of faulty judgment? An accidental selection? Or is it determined by causes probably much deeper, of which the patient was not consciously aware? According to Freud's deterministic theory (6), each action is the result of phylogenetic and ontogenetic association and environment. The homosexual strivings were undoubtedly the driving force in determining his selection of the army or navy, since there he had his best chances to satisfy his homosexual craving while consciously he selected the army or navy in order to assert himself to prove that he is masculine enough to be a warrior. Being a warrior is symbolic of conquest. Sexual potency is associated with the conquering of the female. Bearing in mind his homosexuality, we shall proceed now to point out the reason for the development of the psychosis, why the particular delusions mentioned appeared, and, finally, their use to the individual.

Upon joining the army he meets his company commander, Major X, a man of authority, high rank, and undoubtedly strongly masculine characteristics. What is more natural than for our patient to become attracted to him. Major X, on the other hand, either totally ignored him or treated him with the contempt the strong usually have for the weak. The men laughed at his femininity, the officers called him a "perfect lady." What is more natural under these circumstances than for our patient to endeavor to *assert* himself, as he expresses it, to prove to them that he is not as "weak" and not so inefficient, and, hence, his efforts to secure a commission. Major X reports him as temperamentally unfit to command men. This brings very close to his consciousness his sense of inefficiency and the knowledge of his homosexual strivings. To protect himself from the pain such a revelation would cause him, he develops a paranoid condition, he projects his difficulties upon somebody else, imagines that he is being persecuted, etc., thus being saved from the pain that the conscious knowledge of inefficiency would cause him. He uses the method of flight to overcome an obstacle.

White (7) speaks as follows about the projection mechanism:

> "When our love goes out in a certain direction but finds its path blocked, finds itself up against a stone wall, so to speak, then we feel from the loved object only pain. This pain comes from the loved object and so prevents a realization that the trouble is within and not without. This is the mechanism which is back of the delusions of persecutions. Projected hate, or the feelings of persecution, has a positive function to perform. Whenever such a 'love-hate' is analyzed, it is found that the love is not a normal adult love leading to constructive efforts, but such a love as affords only a sense of safety, the person loved being possessed of money or power to protect because he resembles a parent and reanimates the old feeling of dependence. Such hates then tend to drive us away from sources of danger, from attachments that would prove our undoing, thus serving as a safety motive."

In our case the mechanism is identically the same.

This patient develops an attachment, or love, for Major X. This love is not a constructive one. It is not reciprocated, for reasons that the patient cannot help knowing. Thus, he receives pain from the loved one. He therefore defends himself by hating the Major.

Our patient tried to overcome his feeling of inefficiency. He endeavors to

assert himself to prove to Major X that he is not so weak; thus, perhaps, trying, though unconsciously, to gain the esteem of Major X. But here he fails. Then, to defend himself from his own shortcomings, his own deficiencies, he ascribes his failure to the persecutions of Major X. The persecutory delusions in this case are, therefore, ineffectual efforts and forms of compromise and compensation to escape the adequate, straightforward and necessary way of dealing with reality—they serve the "safety motive."

This case presented many other interesting features which threw considerable light upon the mechanisms leading to paranoid states, the basis of which is homosexuality (8).

In this case there was no history of perverse sexual acts. The patient belonged to the unconscious homosexual type, who, according to Brill (9), often develop into paranoid states because they are afraid of becoming homosexual or fear that someone suspects them of being homosexual. This patient stated that he was rejected by the Board for the commission because one of the lieutenants, at the instigation of his arch persecutor, Major X, "intimated" that the patient was a sadist and sexual pervert. Later on the patient, confidentially, informed me that he has positive proof that Major X is a sadist and the worst sexual pervert in the world. (Projection mechanism.) This extravagant statement regarding his ability and his grandiosity was evidently psychic compensation for his impotence.

The energy of Man, his courage, his enjoyment of work and life, all, with hardly exception, depend upon his sexual power. The character of man must, as a matter of course, be considerably affected by the consciousness of impotence. No one is more severe than the impotent in passing judgment on his neighbor. Since he cannot join the virile in their enjoyment of life, he makes the most of his incapacity (10).

The following is, in part, a stenogram of patient's statement upon his admission. "Up until last June when I went up for a commission I had an excellent character and commanded the respect and confidence of officers and enlisted men included, and it is only when I aspired to become one of the "select, or elect," a gentleman made by the Act of Congress or signature of the President—that is the only thing that makes an officer a gentleman—only when I began to aspire to become one of them that it was found out that I have such a disreputable character. Now about some self-praise. (This quite melodramatically.) There is no man living today who can prove conclusively and without the least shadow of doubt anything about me. I am a man of the highest character, most capable and competent to fill the position I sought. There is no purer man than myself, a man who has never dealt in any of the *lasciviousness* of the younger men, either man to man, man to woman, or self-abuse in any of its forms." (Making a virtue of his impotence.)

One of his delusions to which the patient gave considerable prominence was the following: When the War broke out he went out with some men and, for the first time in his life, visited a house of prostitution. He went into a room with a woman, but did not stay with her. (The reason is obvious.) Later on he suffered from fever and had a "*bubble*" on his penis. He reported to the army doctor, but the surgeon, without examining him, pronounced it "gonorrhea," which fact was noted on the patient's medical record.

It sounds, of course, quite unreasonable that in the army, where special attention is paid to any venereal infection, a diagnosis of "gonorrhea" should be made without any examination; furthermore, the military records of this patient did not show that he suffered or was treated for gonorrhea. Why then such a delusion on the part of the patient? Of course, he wants to discredit the army officers. Since he cannot become an officer, the disappointment can be easier borne if he depreciates them. It is the same old "sour grapes" story. However, this does not explain why he should

consider himself as being accused of suffering from gonorrhea. The following statement of the patient explains it very clearly:

"When Major X heard that I had contracted gonorrhea he laughed, saying: 'Now W. B. C. is a man and I will approve him for anything he applies for.'" The patient, though not admitting to himself that he is homosexual, was, nevertheless, aware that his femininity was the main stumbling block to the achievement of his desire, the securing of a commission. He undobutedly had a wish to prove to Major X that he was a man. He also frequently heard the remark made to a victim of gonorrhea by way of consolation: "Now you are a full man!" This became associated with a wish, subconsciously expressed by him, as follows: "If I could make believe that I am suffering from gonorrhea Major X would then think I am a man." Here then the delusion serves as a wish-fulfillment.

Upon admission to the hospital the patient had a beard and moustache trimmed so as to strongly suggest that the patient wished to resemble Christ. When this was suggested to him he protested vigorously against it, showing a rather pronounced reaction. He explained that he has grown a beard because he expects to go and see President Wilson, and, of course, he wanted to look like a "man" when he spoke to the President, and not like an eighteen-year-old boy. Here the man's appearance was determined by his feeling of inefficiency.

This was the explanation the patient made to his consciousness. Unconsciously, however, he is probably progressing toward the idea of his being Christ, a mechanism which frequently prevails, having for its basis impotency. The impotent individual is inclined to attribute his freedom from passion to his being especially pure, and, by reason of his purity, he later on identifies himself with deity. The explanation as given by the patient for his wearing the beard represents his conscious knowledge of the same.

The progress of the case of this patient during his stay at the hospital was quite interesting. He did not develop any delusions referable to his new environment. On the ward his conduct was at all times good. He, however, had an air of superiority about him. (Compensation for inefficiency.) Dr. Glascock, physician in charge of the patient during the latter part of his stay at this hospital, describes his behavior as follows: "When the more disturbed patients appropriated from him papers or other trivial articles he reprimanded them most severely and endeavored to be as masculine as possible. (He continued to assert himself.) On several occasions, however, he came into contact with patients who understood his deficiency, and W. B. C. naturally suffered an ignominious defeat. After being in the hospital for about three months he was sent to work in the tailor shop, where he adapted himself quite readily and became an efficient helper. He was later on granted parole of the hospital grounds. He never abused his privileges, was always punctilious, and gave the impression of being quite conscientious. He no longer, when molested, assumed the aggressive attitude towards those whom he thought he could domineer. (The stimulus which gave rise to the feeling of inefficiency was wearing off, and hence no need for compensation.) He continued to retain his paranoid ideas toward Major X, and, though he possessed a certain amount of insight into his homosexuality and effeminacy, yet he failed to see the justness in the commanding officer's refusal to promote him to second lieutenant. He no more, however, showed any special reaction in speaking about the injustices accorded him while he was in the army. He asserted positively that he had dropped the whole matter and would never seek any redress."

After being here about six months this patient was discharged into the care of his mother, who came after him, as a "social recovery without insight." What the ultimate result of this case will be it is rather hazardous to predict. However, it is quite evident that this patient has not overcome his difficulties. He has only adjusted himself in a satisfactory manner under favorable conditions. He has succeeded to

repress only temporarily his homosexual strivings. They will surely renew their demands upon him sooner or later. He will again change occupations and places. His inefficiency will again be forced into his consciousness. Whether he will adjust himself through a projection mechanism or a compensatory and self-deification mechanism is difficult to state, but some form of psychical compensation will have to take place. In order to cure this individual it would be necessary to bring his homosexuality to his consciousness and release all repressed material which has accumulated in this case since childhood on. This method (psycho-analytic) was not deemed expedient in this case, as the trouble was too deeply rooted, being indicated by his very strong defenses against it. Through the rather free discussing of the case with the patient he was given a considerable degree of insight into his condition.

Case II.

C. L. H., soldier, 27 years of age, married, religion Baptist. He was admitted to the Saint Elizabeth's Hospital August 14, 1907. The medical certificate which accompanied him stated that the first symptoms were noticed in August, 1907, when he joined his company in Cuba. He had delusions of persecution, and gave a history indicating that these delusions commenced as early as 1905; also a history of having left his wife in February, 1906, because of faithlessness.

Family history showed oldest brother to be a patient in a state hospital; otherwise, negative.

Personal History.—He was born on a farm. His mother died when he was ten years of age. He had been quite attached to both parents, perhaps more so to the mother. He attended school for only a brief period, was brought up in a strong religious atmosphere, becoming a Baptist through the ordinance of Baptism by Immersion at the age of thirteen. Since youth he has always been troubled by religious matters, being fearful that he was not right in the sight of God, and felt that he could not live as he ought to. His father instructed him early in matters of sex, in a general way, and warned him strongly against onanism. He had few companions, because he lived on a farm. He was, however, quite sociable. His best friend was his brother, who was three years his senior. (Now a patient in a state hospital.) His brother always domineered him, and the patient felt himself quite inferior to him. When six years of age, he practiced onanism on a few occasions at the instigation of some boys; thereafter, however, abstaining from the practice until he was fifteen, when he again succumbed to it, indulging therein quite frequently for about one year, then ceasing because the knowledge that it was a great sin dawned upon him. He seldom associated with girls, did not specially care for their company, never kissed a girl nor was ever intimate with one, had no heterosexual experience before his marriage because it was against his religious belief. He was married when twenty-five years of age, left his wife one year later and joined the army, previous to which he had followed the occupation of a farmer most of his life.

Present Illness.—Shortly after his marriage, he found out that his wife was untrue to him, which worried him a great deal. After living with her for one year, he left her and travelled around from one state to another, staying two or three months at each place, and, finally, joined the army. There, people wanted to kill him, called him vile names and intimated that he had a disreputable character.

Mental Status.—Upon admission to the Saint Elizabeth's Hospital, patient was rather reticent and suspicious. He, however, related the story of his marital unhappiness and gave voice to delusions of persecution and auditory hallucinations. Facial expression was rather tense, and it was evident that he did not disclose all his delusions and hallucinations. He was neat and tidy in dress and appearance, and co-operated fairly well during the examination.

It is not very difficult to see that this is another case of sexual inversion—homosexuality. His never caring for girls, and his freedom from heterosexual experiences cannot be ascribed to his religious convictions, since they did not prevent his indulging in the practice of onanism and sexual perversions of the lowest type. His religious and ethical perceptions, however, help him to suppress his homosexuality, and even to venture into the field of heterosexuality. He gets married. The homosexuality, however, is not completely repressed—it still dominates his behavior. As a result of it he is impotent, and, of course, trouble begins at once.

The history of marital unhappiness as related by the patient himself follows: "When I married, my wife was a good woman. I was not "well" at the time, and for that reason she was false. I had some financial troubles at the time and lost money over a piece of land I bought. We moved and went to live with a widower. In a short time I found that she was my wife in name only, but was in reality the wife of the widower. I became greatly worried over this. I could not sleep, and my thoughts troubled me. I knew she was false, and I meant to catch up with her. I kept on worrying, and while I was working I became impressed that God was against me and that she would beat me out after all." He later on stated that for three weeks after his marriage his wife was still a virgin; that although he had relations with her she did not allow him to perform the

act properly. He was too "innocent" in the matters of sex at that time. He knew then she was not true to her marriage vows. Asked why she should have acted so he tried to explain that she probably did not like a *man who "knew" so little of sex matters.* While we do not know the actual facts of the case, the question of his wife's unfaithfulness, actual or alleged, is quite unimportant. He states that she was a good woman before he married her. He admits that he was not "well" and that he "knew" little of sex matters, and he, himself, gives those as reasons for his wife's unfaithfulness. The accusation against his wife is undoubtedly a projection mechanism, and this becomes more certain as the progress of the psychosis is studied. He leaves his wife and wanders about for about one year. He then enlists in the Army. There voices call him vile names. They say his character is disreputable. Upon admission to the Saint Elizabeth's Hospital, he was in a typical homosexual panic. During the first year of his stay here he was rather mute and somewhat catatonic, facial expression denoted distress. He frequently groaned feebly, never spoke to anyone unless spoken to, could not explain the cause of his mental anguish, and presented a picture of what Jung, White, *et al*, call "introversion" in a marked degree. He tried to shut out reality and go back to a period when he was free from conflicts. He frequently refused food. He did not show any initiative, and was usually seen sitting in a rather constrained attitude on the edge of a settee. During the second year of his stay here he began to show some signs of improvement. He was still dull and indifferent, but did not seem to be in distress, was oriented as to place and person, and approximately for time. He still gave voice to auditory hallucinations. During the third year of his stay here he appeared to show considerable deterioration, the notes describing him as being "demented." He exhibited almost no interest in life, sat on the ward in a listless manner, spent his time in idleness. Toward the beginning of the fourth year of his residence here he began to show considerable improvement, and, at the same time, a religious coloring appeared in his speech and in his vague delusions and hallucinations. He became pleasant, agreeable, took interest in his surroundings and assisted with the ward work. He was oriented in all spheres and later on began to read the Bible a great deal and to talk with the patients upon religious subjects.

In July, 1913, he declared that he was John the Baptist. He had grown a beard and long hair, and his facial expression was Christlike. He was oriented in all spheres and his memory was good. He was alert and in touch with his surroundings. He stated that while in the army he received the message from God, and said that he had been asleep several years.

For the last four and a half years these delusions have become fixed. He has done a great deal of Bible reading, and, in conversation, he uses many Biblical expressions to prove that he is John the Baptist. He is at all times completely oriented, converses in a rational manner, shows no failure of memory, is an efficient worker, and is getting along quite well. He denies the presence of delusions and hallucinations. He is extremely polite in speech. His conduct is in accordance with his delusional ideas, he preaches to the patients and reprimands them when they use profane language.

The psychosis in this case clearly indicates the projection mechanism and *the self-deification mechanism.* He first projects his difficulties upon his wife and the widower. He then runs away from the situation and enlists in the army. There, evidently, his conflict is brought to his consciousness in a more acute form. It forces into his consciousness his sense of inefficiency. The knowledge that he is the possessor of asocial tendencies, wishes and inclinations contrary to his religious and ethical perceptions causes him great pain. He can only save himself by withdrawing himself from reality, which he does during the two or three years of his psychosis, a way leading apparently to deterioration and dementia. But, as the stimulus which caused the pain begins to wear off, he comes gradually back into reality. He must, however, protect himself, not as an inefficient individual, lacking the power to "create," but as the Messenger of God, a Spirit, and hence above all the demands of the Flesh. He is no more in need of any projection mechanism, hence his persecutory delusions and auditory hallucinations disappear.

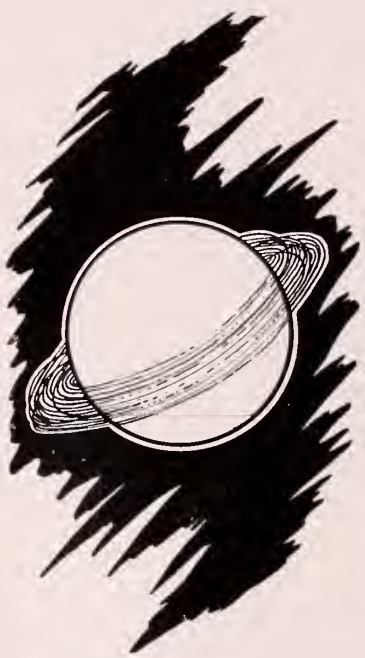
Conclusions.

Delusions and hallucinations are not senseless and accidental psychical phenomena. Like the symptoms of purely physical disease, they, too, serve a definite purpose. They are defense mechanisms established during the history of the Psyche. Just as "fever" is no symptom of any definite disease, so a certain delusion or hallucination is no indication of a definite mental conflict, and just as certain groups of symptoms often indicate a specific disease, so a certain group of delusions and hallucinations

frequently indicate a definite mental conflict. Delusions of persecution and reference, coupled with ideas of great efficiency, powers of invention and history of heterosexual abstinence, in a majority of cases, indicate homosexuality and impotence.

REFERENCES.

1. William A. White: Medianisms of Character Formation, Ch. VIII—The Will to Power. MacMillan Company, New York.
2. Freud, Sigmund: Three Contributions to the Theory of Sex—Nervous and Mental Diseases, Monograph Series, No. 7.
3. Hitschmann, Edward. Freud's Theories of the Neuroses—Nervous and Mental Diseases, Monograph Series, No. 17.
4. Brill, A. A.: Psychoanalysis, Its Theories and Practical Application. W. B. Saunders Co., Ch. X, The Only Favorite Child in Adult Life.
5. White, William A.: Principles of Mental Hygiene, Ch. III, Mental Mechanisms. MacMillan Company, New York.
6. Freud, Sigmund: Psychopathology of Every-day Life, Ch. XII, Determinism. The MacMillan Company.
7. Loc. Cit. 5.
8. Shockly, Francis M.: The Role of Homosexuality in the Genesis of Paranoid Conditions, The Psychoanalytic Review, Vol. I, Oct., 1914.
9. Brill, A. A.: The Conception of Homosexuality, J. A. M. A., August, 1913.
10. Myers, John Quincey: Natural Instincts in Relation to Disease and Psychoses. ALIENIST AND NEUROLOGIST, November, 1917.



FOUR CASES OF PELLAGROID DISEASE WITH TWO AUTOPSIES.

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THE purpose of this paper is to report four cases of pellagroid disease occurring in a Massachusetts State Hospital during the past two years. Three of the patients first showed symptoms after many years of custodial care, and in the case of two of them without any exposure whatever to the sun. Spoiled corn, in the Lombrosian sense, can be positively excluded in at least three cases, yet in two of these the characteristic *post mortem* lesions were found. In all four cases the relation to dietary deficiency seems very clear. All questions of epidemiology are excluded since there are very few such cases seen in Massachusetts, and, moreover, these cases occurred sporadically. In two cases recovery followed very promptly upon change in diet; in another case there was marked improvement but death occurred suddenly from other causes. With the work of Goldberger and others so recently published it has seemed worth while to publish corroboratory cases from a district so remote from the pellagra zone as Massachusetts.

Case I.

Occurred within hospital; death, autopsy. I. E. L., 36 years of age, married.

Family History.—Father alcoholic. One sister in hospital; diagnosis, catatonic dementia praecox. (Possibly stuporous depression.)

Personal History.—One of thirteen children, most of whom died in infancy. Married at twenty-two years, four children, one triple birth, of whom one survived. Moody, easily depressed or exhilarated. Two admissions to Taunton State Hospital. First followed an operation for mastoid. In hospital, destructive, noisy, delirious. Then talkative, irrelevant, deluded, violent, often negativistic and obscene. Hallucinated. Sent home against advice. Did fairly well until late in 1910; operated upon, tube, ovary and appendix removed. Committed January 23, 1911. Irrelevant in conversation, neologisms abounded, hallucinations and somatic delusions; often excited, at other times apathetic.

In October, 1916, *she threw away both sets of her false teeth.* They were not recovered. She lost weight, and became quite weak. Early in December, 1916, stopped eating. On December 9th a severe diarrhea set in and she was transferred to the Infirmary.

December 13th, it was noted that a symmetrical erythema had developed on the dorsal surface of both hands, extending up to the wrists. This symptom, in conjunction with her previous watery diarrhea which did not seem to react to the usual treatment, at once suggested the possibility of pellagra. Her bowel evacuations were noted to be more frequent at night. A slight stomatitis was present when she was received at the infirmary and this rapidly became worse. The gums, especially the lower one, became much inflamed and ulcerated. The under surface of the tongue became inflamed and small, ulcerated spots were observed along the frenum. Soon an acute uvulitis and pharyngitis set in, the flow of saliva was increased, and as it drooled out along the angles of the mouth, produced fissures and herpes. Proctitis, vulvitis and vaginitis soon developed, and her food (which was in liquid form and taken with difficulty) was noted to be passed in her stools in a much undigested state. The erythema of the hands soon changed to a brownish discoloration, the skin became palpably and perceptibly roughened and dry, and the line of demarcation separating the normal from the abnormal skin was made more distinct, giving the whole area of pigmentation a *glove-like effect.* Dry, roughened patches formed on her elbows, knees and buttocks. The diagnosis of pellagra was made on the 14th of December, and though an intensive animal protein diet was administered, from

then on her body became more and more emaciated, her diarrhea continued to be profuse, her food undigested, regardless of intestinal antiseptics, astringents and digestive aids until about the middle of January, when an appreciable improvement was noted. Her conjunctivae became purulent and an ulcer formed on the margin of the cornea of the right eye. Her abdomen was sensitive to pressure, she complained of a burning sensation especially in the epigastric region, there was a mousy odor about her, and as the picture well depicts (Fig. 1), she had an anxious, glaring expression. Under special diet she seemed to improve physically and mentally. Her face lost for a time its anxious, frightened appearance, becoming brighter. Her stomatitis, proctitis, etc., responded very nicely to treatment. Her appetite increased and she very seldom, if ever, refused her nourishment. Around the mouth and chin the skin became dark and roughened, the herpes more marked, but these finally reacted to treatment. The skin of the hands became drier and darker. On December 28th the knuckles showed a crater-like splitting of the epidermis, and the following day the skin began to desquamate. About the middle of January, the hands had practically become free of desquamation and a pinkish, glistening skin remained. During the latter part of January, she felt much stronger, but as there was a chronic myocarditis existing, she was allowed to sit up in bed but for brief periods during the day. Suddenly, after a few days of confusion and excitability, her heart flagged and she died on February 2, 1917. Mentally, during this last illness, she was confused,

Fig. 1.

rambling in her conversation, very much deluded, very surly and irritable. During the first two weeks she had a slight temperature, 100° to 101° per rectum. Neurological examination revealed her to have a diminution of the patellar reflexes, more so on the right side. Her stools, though less frequent and much less watery, continued to harbor much undigested food particles up till the last.

Having decided that we were dealing with pellagra, we were curious as to her former diet. The charge nurse on the ward where she had resided when she was taken sick, reported that for some months previous to her transfer to the infirmary, *she had lived chiefly on bread (white and graham), corn meal and corn starch pudding. She ate very little if any meat, and after ridding herself of her false teeth, she ate freely of corn meal mush and corn starch pudding, in fact, ate practically nothing else.*

Summary of Post Mortem Findings.—Moderate emaciation. Dark discoloration of hands, face, scapulae, elbows and sacrum. Skin in these areas roughened and thickened.

Myocarditis, Chronic.—Atrophy of muscle with interstitial proliferation. Lungs negative. Intestines show atrophy. No ulcers, slight engorgement of vessels, slight increase of mucus. Stomach and intestines distended. Spleen, moderate perisplenitis. Moderate passive congestion of liver. Kidneys small, rather pale. No arteriosclerosis.

Head.—Calvarium negative. Dura slightly adherent. Brain not remarkable on gross examination, weight 1,310 gms. (Rather large and heavy for the small woman.) Cord, gross examination negative. Pituitary, Gasserian and solar plexus ganglia, removed.

Microscopic Examination of Nervous System.—Meninges; these showed slight congestion and a moderate thickening with slight increase in number of nuclei and evidence of recent proliferation. Changes not marked.

Cortex.—Throughout cerebrum changes were similar and so may be described together.

1st. There was practically no evidence of exudation of any kind. No lymphocytosis.

2nd. Neuroglia increase moderate. There are small areas around very much damaged nerve cells where the sustentacular glia is distinctly heaped up. There is little, if any, evidence of proliferation of the grant glia cells. (Cajal stain, Mallory's stain.)

3rd. The endothelial cells of the small capillaries are somewhat swollen and increased in number. The perivascular spaces around the capillaries are somewhat dilated. These changes are inconspicuous.

4th. The most important and the most characteristic changes are in the nerve cells themselves. These have been described by all the recent writers and are here briefly summarized.

Fig. II.

A. Typical axonal reaction.
B. Bizarre chromatolysis.
C. Cell, nucleus disappeared, and also nissl bodies.
D. Bizarre chromatolysis.
E. Atrophied cell, showing pericellular net.
(Camera lucida drawings 1/6, Nr. V. Toluidin blue stain—95 per cent. alcohol fixation.)

1st. The acute "axonal" reaction is very conspicuous. Throughout, large and small nerve cells in every layer, show displacement of nuclei, diffuse staining of cytoplasm and swelling of body.

2nd. Curious and bizarre staining of the Nissl bodies. These are sometimes welded together in large, irregular masses, with the nucleus perhaps central, perhaps peripheral.

3rd. Almost complete atrophy of the nerve cells. The cells are shrunken, the cell processes irregular, the staining barely differentiates the cells from the surrounding tissues. The atrophy of the cells show up the pericellular net work which ordinarily cannot be seen through use of the Nissl method. The cell gives one the impression of a squeezed-out sac enmeshed in a net work.

These changes are almost universal. Even the vagus nuclei, the cranial nerve nuclei, the olivary body cells, those of the Dentate nuclei share in the damage.

The pigmentation of the cells, emphasized by the earlier pathologists, were not conspicuous in the slides of this case. Even in the Sympathetic, where Lombroso believed to have found especial pigmentation, showed only the visual conspicuous pigmentation.

Marche Changes.—Fibre degeneration, in small, isolated foci were found in the lateral tract regions and post columns of the cord. These were not, however, as conspicuous as has been noted by Tuczek and others as part of the classical pathology. (Fig. II.)

Case II.

A. K. H., white female, age 39 years at death; married.

Family History.—Negative as far as has been ascertained.

Personal History.—She was born in Maine and was the fourth of seven children, concerning whom nothing of special note has been learned. She was well as a child, received a common school education, and was married at about the age of sixteen. She had one miscarriage and eight children, all of whom are living and well. Her catamenia were regular up until her thirty-third year, when they became irregular, becoming more so as the time went on. At about this time she began to be forgetful. All her married life, she had been subject to headaches and when carrying her children would have "blind spells"; that is, attacks of transient blindness. Two days previous to her first admission she began to complain of the feeling of a weight on her head and the persistency of this, along with her forgetfulness, was very annoying to her. In the Fall of 1914, she frequently spoke of dying, was indecisive, forgetful, fragmentary and split up in her flow of thought and very unstable emotionally—now being depressed, now cheerful. She was visually hallucinated and she often spoke of having two personalities, one crazy, the other normal, and that the former was getting the better of the latter.

Hospital History.—When admitted to this hospital, on February 23, 1915, she was very much excited, confused and restless. Her conversation was very incoherent and irrelevant. The skin on her chin and the dorsal surfaces of her hands was dry, thickened and roughened. For five weeks she was confused and delirious, revealing visual and auditory hallucinations, much irritability, marked restlessness, profound mental cloudiness and an incoherent, irrelevant, split-up flow of thought. Her husband stated *that for months previous to admission she had abstained altogether from decidedly protein foods, abhorring all meats, eggs, milk, etc., limiting her diet to potatoes, rice and bread. He noticed that her hands had been discolored for months and that the skin on the backs of her hands was dry, roughened and thickened, but that her chin became so only a few weeks previous to admission. Furthermore, he reported that the epidermis cracked open and peeled, following a discoloration in the early Fall, and then in late November this was repeated. She never had diarrhea, but, on the contrary, was inclined to be constipated.* In April, after having been placed on a high protein diet, she began to clear mentally, gradually regaining all her faculties, though found to be amnesic for her confused period. Physically she was very weak, and in the first part of May she complained of an inability to sew owing to a marked weakness in the muscles of her hands and forearms which seemed at times to be numb. On this account, and the fact that her irritability was returning, she was again placed in bed. On the 6th and 7th of May she complained of a "running pain" in her left arm. The latter part of the night of the 7th of May, she had an aphasic or paraphasic attack following which she was transiently blind and unable to talk connectedly. This condition rapidly improved during the day. In talking with her the following day, she stated that since her marriage, and especially so when carrying her children, she had been wont to have somewhat similar attacks though not quite so severe. *The spinal fluid which was examined in May was negative in all its findings.* Her reflexes were hyperactive throughout. The neuritis which patient had in her left arm quickly responded to treatment. On June 20, 1915, patient was discharged to her husband as recovered from what was considered an exhaustion psychosis with pellagra, though it was felt that toxic influences played a great part in its production, and in this instance it was surmised that whatever produced the pellagra, produced also the psychosis.

After leaving this hospital she went to reside with her father on his farm in Maine, staying about seven weeks and was very much benefited. She then returned to her own home. There she had "many little nervous spells." These lasted but a few hours and usually occurred at night, especially when the day had been tiring to her. She tired easily, became restless at night, screaming out at times. These "nervous spells" became more frequent. "Her dizzy, blind sick headaches" returned, rendering her transiently delirious and aphasic. During her confusion she would reveal most fantastic and unsystematized delusions colored with much sexuality. *It was especially noted that her legs, which during her convalescence were weak, continued to be so at home.* Her diet, while at home, consisted of the following:

Breakfast: Cooked cereal, generally rolled oats, sometimes corn meal gruel. The family used to have corn bread every morning for breakfast, but have not had it now for ten years.

Dinner: Meat, potato and other vegetables. She was a hearty potato eater and when not eating meat would save out the beef broth for herself.

Supper: Usually a light meal. Sunday nights she often had corn meal mush.

On her second admission she was very weak and of a toxic appearance. Her physical examination revealed a chronic myocarditis, a brownish-gray discoloration of the chin and around the mouth a general bronzing of the skin, a severe gingivitis, extreme muscular fatigue, and very hyperactive reflexes. Mentally, she was restless, talkative, rambling and incoherent in her flow of thought,

destructive, excitable and confused. She rapidly grew worse, becoming filthy and self abusive in her habits, and soon very delirious. Three days previous to her death the skin on her chin, the backs of her hands and her elbows grow darker and rougher, rapidly progressing to a state of dark pigmentation. The next day, the dark, rough skin over the knuckles of both hands split open in a crater-like fashion. Then a severe diarrhea set in. For a week she had had vaginitis with a profuse leucorrhea. Her gingivitis became worse and spread out into a severe stomatitis with ulcerations. The following day her heart action became very rapid and weak and she died March 31, 1917.

Autopsy Findings Summarized.—Large, moderately well nourished woman. Hemorrhage into sclera. Skin on backs of hands roughened, thickened, split. Similarly with elbows. Skin around chin and mouth pigmented and roughened. Ulceration of mouth and tongue.

Myocarditis.—Lungs, early broncho-pneumonia. Intestines, congested, mucus. No ulcers. Atrophied mucosa. Spleen, enlarged. Liver, fatty infiltration. Kidneys, moderate congestion, some increase in connective tissue. Adrenals, negative. Chronic metritis.

Head.—Membranes congested, some increase of cerebrospinal fluid. No sclerosis of vessels. Aside from above, no gross changes. Weight 1,215 gms. Cord, negative.

Microscopic.—These are practically those of previous case except:

1st. Neurological increase more marked.

2nd. Changes in cells not so acute. More atrophied cells seen especially in medulla and pons.

3rd. Marchi changes seen in lateral tracts.

4th. Occasional small groups of lymphocytes are seen.

Case III.

M. B. C., white female, age 57 years, single.

Family History.—A paternal grandfather, a paternal uncle, a maternal great uncle, a maternal uncle, and a brother, were insane. Her maternal grandmother was considered to be very eccentric. Her father was alcoholic and very cranky and irritable during his last years.

Personal History.—She was one of eleven children, seven of whom died in infancy. One brother died of pulmonary tuberculosis. As a child she was healthy and showed no mental peculiarities. Owing to the chronic invalidism of her parents, at the age of sixteen she was obliged to assume full charge of the home for which she had all responsibility until her mental breakdown. Her father, as he aged, became a very cranky and irritable invalid, demanded almost her constant attention, finally rendering her very nervous and subject to severe headaches. At the age of twenty-eight she had an attack of "nervous dyspepsia" and this from then on troubled her more or less. In March, 1913, she became untidy and careless in her personal attire. Later, she was visually and aurally hallucinated and revealed many phantastic, somatic delusions along with a morbid fear of some impending harm. She worried about her constipation and ate but sparingly.

Hospital History.—On admission she was quiet and very weak. Physical examination revealed nothing of special note. Mentally, she revealed delusions of reference and persecution along with somatic ideas, auditory, visual and tactile hallucinatiotns. Emotionally, she was agitated and apprehensive, was well oriented, had fairly good memory but lacked all initiative and ambition. She soon became indifferent to her environment and exhibited a shut-in personality, doing very little, if any, work. In the Fall of 1914 she was placed in family care. Just previous to her attack of pellagra, she was described as being quiet, moody and demented, doing very little work. About the first week in April, 1917, her fair appetite evolved into an anorexia. The dietary at the house where she was boarding was as follows:

Breakfast: Cereal (either oatmeal, cream of wheat, or corn flakes), white bread and butter, or muffins, coffee and cookies.

Dinner: Potatoes, macaroni or rice, fish or meat, one vegetable, either peas, corn, tomatoes or succotash. For dessert, puddings of various kinds.

Supper: Bread and butter or muffins, sauce or jelly, cake and tea.

Though the above is an excellent diet, her caretaker stated that from the first part of April, it was almost impossible to make her eat anything. If left to herself she would either leave the food untouched or would throw it away. About this time she began to have diarrhea which continued off and on until it grew so severe and debilitating it was found necessary to return her to the hospital on June 4, 1917.

On admission to the hospital she was found to have an edema and a profound, symmetrical brownish-red discoloration of the dorsal surfaces of the hands, more intense on the ulnar side, and extending around to the palmer surface, a slight patchy erythema of face, that is, over nose, cheek bones and on the chin; a purulent conjunctivitis, and a moderate degree of stomatitis, the line of demarcation existing between the hard and the soft palate being made very distinct owing to the extreme redness of the soft palate. There was also a patch of dark, rough, dry skin over the seventh cervical vertebra. She complained of a burning sensation throughout her body which was very much emaciated. Her abdomen was tender on pressure. There was marked diarrhea of no especial character. *It had been felt that the condition of her hands was nothing but a sun burn, but on investigation it was found that she had been exposed very little to the*

sun's rays. The skin rapidly became dry, roughened and thickened on the hands, face and forehead. On the 12th of June the skin on the left hand started to show bleb formation, to split open and peel. From then on the splitting and peeling of the epidermis gradually progressed until by the third week in July her hands were clear. The skin of the face over the nose, cheek bones and chin underwent dry desquamation, and the roughness of the same was slower to disappear. As her anorexia was profound, a bitter tonic was prescribed for her and it was not long before she was willingly taking the high protein diet in proper quantity. From July she gradually improved, and as can be readily seen by her picture, considering that she is psychotic, she looks pretty well physically. (Figs. III and IV.) Her diarrhea was the most obstinate symptom, now watery, now

Fig. III.

semi-solid, until finally the bowel movements became practically normal in August and she has had no recurrence. Since August, she has been eating the full, regular, hospital diet and her appetite has continued to be very good. Mentally, during her acute symptoms, she was more depressed, dull and apathetic. At present she is quiet, tractable, but more or less indifferent, lacking all initiative and ambition. She is the bench type and her dementia is becoming deeper.

Case IV.

M. L. P., white female, age 58 years, married.

Family History.—Paternal grandfather was insane. Her mother, who is living, is psychotic and was at one time a patient in a hospital for insane. Her psychosis was manic-depressive, depressive type. A paternal great uncle was insane, but was never confined to an institution.

Persanal History.—Native born, she was one of four children, concerning whom nothing of note has been elicited. Her childhood and adolescence were without special note. Her habits were exemplary, but she was disposed to easily worry. Previous to the birth of her second child, she was a "little strange" for about five or six months and following the birth she soon recovered her mental health. Her next attack was in May, 1904, when she became very flighty in her conversation and emotionally irritable. In April, 1905, she became deluded, untidy, restless, excitable, destructive and violent, necessitating her commitment to this hospital on July 28, 1905.

Hospital History.—Physical examination was negative. During the first of her residence she revealed many manic traits, was exhilarated, restless, very talkative, flighty in her ideas and facetious. She has fluctuated in her emotional tone and conduct, depressions alternating with excitements in which last she would be very destructive, violent and assaultive. On this account she has, for the greater part, been cared for on a disturbed ward.

Fig. IV.

In May of this year, while continuously in the ward, she suddenly developed a symmetrical erythema on the dorsal surface of the hands which were slightly swollen, and also a swelling and erythema of the face starting on the left cheek and rapidly spreading to the right one. Her temperature was 102° per rectum. This, however, disappeared after a thorough saline purgation and never recurred. Patient appeared to be very weak and her body poorly nourished. On investigation *it was ascertained that far at least a month she had practically lived on bread, cereals (including oatmeal, corn starch pudding and corn meal mush), potatoes and water,* refusing all other food. The oral cavity presented a moderate degree of stomatitis, the line of demarcation between the hard and the soft palate being made very distinct owing to the deep redness of the latter and the pinkish

color of the former. It was at once decided that she was at least pellagroid, if not pellagrous, and she was transferred to the infirmary where, under special protein diet, she, in six weeks, recovered from the symptoms which, though she had no diarrhea, were most suggestive of an early case of pellagra. The skin of her hands did not undergo bleb formation or splitting, as did the others, but passed through a dry desquamation. Her stomatitis rapidly disappeared as did also the dry, rough skin of her face over the cheek bones and on the chin. Since the last part of July she has been eating a full, regular, hospital diet and has continued to have a good appetite. During her acute illness, she was very quiet and meek, talking in a low tone and only when addressed, but as soon as her pellagroid symptoms disappeared she began to get more talkative, restless and noisy. In September she became threatening and excitable, necessitating her removal to the disturbed ward where she at present is residing. (Figs. V and VI.)

Fig. V.

Discussion.

With the exception of an occasional worker like Sambon, who believes that pellagra is epidemic, the consensus of medical opinion has definitely traced pellagra to a dietary origin. Representative of the classical opinion, Lombroso says, "Such are the pellagrins, poisoned by the toxins of spoiled Indian corn." A. Marie heads the second page of his book with the very positive statement, "Alterations in corn are the cause of the pellagra." And Sandwith links the disease to more acute disorders

by saying, "Pellagra analagous to ptomaine poisoning is a chronic intoxication due to eating damaged maize or Indian corn."

It is not our intention to enter into the literature of the disease in any detailed manner. Suffice it to say that opposing the above opinion is that of certain American investigators, notably Goldberger and his associates of the Public Health Service. For Goldberger, pellagra is a disease of dietary origin, due to a deficiency in the animal or leguminous proteins, with a disproportionately large amount of non-leguminous or vegetable proteins. A remark that Goldberger makes is very pertinent to the cases

Fig. VI.

developing in hospitals for the insane, viz., "At asylums for the insane not only should a mixed, well balanced, varied diet be furnished but measures must be taken that the individual patient actually eats it." The experiments on human beings carried out by Goldberger and the experiments on dogs carried out by Chittenden, leave no doubt that pellagra can be caused by a poorly balanced dietary.

Nevertheless, the work of Wood lends color to the belief that possibly pellagra may arise from more than one dietary deficiency. Wood believes that corn deprived of its vitamines and fats through modern methods of milling causes pellagra and proves it by curing pellagrins by feeding them on corn which *has not been deprived* of these

necessary elements. He quotes P. A. Nightingale as showing that pellagra occurred in acute form amongst prisoners fed on highly milled corn, whereas they recovered when the corn was ground by hand.

Our cases support the belief that an unbalanced dietary may cause pellagra or pellagroid disease. In all of our cases *a refusal to eat animal protein food was conspicuous.* Other patients ate of the same corn, but added to it the items of a very well balanced and generous dietary. These patients, out of a distaste for animal food or their delusions, ate only of corn, corn products, bread, etc. It is pertinent to state that one of us searched through the hospital amongst the patients who were tube fed, poorly nourished but who ate of eggs, milk and meat even in small amount and found nothing at all resembling pellagra.

Recovery in two of these patients (No. 3 and No. 4) appeared promptly upon the enforcing of a well balanced dietary. In one case there was improvement from the pellagrous condition *per se*, but death occurred from complicating conditions.

The autopsies showed the very characteristic changes described by all, or almost all the writers. One can only explain the profound degenerative cell changes by one of two theories:

1st. That a toxic agent arising out of the disturbed metabolism has a very disastrous effect upon the nerve cells.

2nd. That poorly nourished nerve cells, under the stimulus of action, degenerate quickly and profoundly. We believe this latter theory to be more nearly correct, though it would be difficult to give satisfactory reasons for this belief.

As practical conclusions, we can only emphasize the warning that dietaries must be representative of many kinds of foodstuffs to prevent such diseases as pellagra. The advice of Goldberger that patients in insane hospitals must be watched as to what they eat as well as to the amount, seems well worth remembering in view of our experience. This has its corrolary in the statement that nurses must be instructed to note dietary idiosyncrasies carefully and to report them.

Finally, the normal population needs to be enlightened. War time exigencies have forced a restricted diet on our generous-living people. They must be warned that certain articles of food, such as the animal proteins and the leguminous proteins, cannot be eliminated withou risk of serious disturbance.

LITERATURE.

Goldberger: *J. A. M. A.*, 1916, February 12, 471; also Goldberger, Waring, Willets, *U. H. P. H. Reports*, 228, 1914, Art. 23.

Goldberger & Wheeler: *U. S. P. H. Reports*, 311, 1915, November 12th.

Goldberger: *U. S. P. H. Reports*, 376, 1916, November 17th.

Lorenz: *U. S. P. H. Reports*, 218, September 11, 1914.

Marie, A.: Pellagra, translated by Lavinder & Babcock, State Co., Publishers, 1910. (This very useful volume contains references to Lombroso, Sambon, etc., and gives an excellent review of pathology of disease of which nothing of note has been added recently.)

Sandwith: *Encyc. Medica*, Vol. IX, Article Pellagra.

Wood: *Am. J. Med. Sciences*, 1916, CLII, 8 D.

TRAUMATIC EPILEPSY, COMPLICATED AFTER FIFTEEN YEARS BY TRAUMATIC CEREBRAL HEMORRHAGE. OPERATION. APPARENT RECOVERY.

By

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ON THE 19th of September, 1915, a man 52 years of age presented himself at my office for examination. He was a laboring man, industrious, clean of habit, but unable to hold his job for any length of time on account of spells of unconsciousness, of varying length, which were said to be not infrequently accompanied by falling, if in upright or sitting position. He stated that the duration of his trouble had extended over a period of some four years, and that the attacks had grown more severe and frequent of recent times. His family history was negative and there was an absence of a history of any serious illness having occurred prior to the onset of his present trouble. Some fifteen years before, however, he stated that he had fallen from the roof of a building and was rendered unconscious as a result of the fall. Recently his periods of unconsciousness had increased in number, and while no definite aura preceded the attacks, at times he stated that he felt a queer sensation in his head. Confusion, of varying length, is said to have been not an unusual sequence to the attacks.

Unfortunately, I had never been in personal contact with the man before, but I was struck at once with the due deliberation with which he exercised his mental faculties. Hesitancy and slowness of speech, almost thickness of tongue, so to speak, were clinical factors so prominent that even the unobserving could not have overlooked the same by willful effort, and yet I was unable to satisfy myself as to whether this condition was pathologic or physiologic as far as the man was concerned. Since no member of his family accompanied him, I had no means of satisfactorily determining this point at that time.

A general examination of the man proved to be negative. His temperature was 99 2/5 F. per orum, his pulse rate 80, and his systolic blood pressure was 110 m.m. His heart sounds were somewhat weak, his lungs negative, and save for a marked tympany over the epigastric area, his abdomen revealed no definite pathology. The deep reflexes were all intact and apparently normal. His breath was very foul, his teeth in a very poor condition, and pyorrhea marked. A rather cursory examination of the skull revealed no depression of any of the cranial bones.

As the examination proceeded, I became more and more at a loss to know just how much importance was to be attached to the slowing of the mental faculties, and also as to the real value of the statements of the man, yet uncorroborated. I temporized the matter by making a tentative diagnosis of epilepsy, possibly traumatic in character, and asked the patient to return in a few days, for further study, accompanied by some member of the family.

Four days later I was called to see the man at his home. From his wife and daughters I obtained some historic facts quite pertinent to his case. Following an injury, which he had received in his thirty-seventh year as a result of a fall from the roof of a building, he had been free from any lapse of consciousness, as far as the family recalled, for a period of some four years. Then one day, while engaged in conversation with a couple of friends, without warning or apparent provocation, he

suddenly became unconscious and fell to the ground. The details of what happened during this attack were too vague in the minds of the family to warrant them giving an accurate account of what transpired at that time, but his wife recalled that it was possibly several hours before he fully recovered his faculties. Again, there was a lapse of some three or four years before a similar attack was repeated. This time he was seized, without warning, while at work in his wagon shop, with a general convulsion, accompanied by a loss of consciousness. From that time on, especially during the least four years, he has been subject to similar attacks, and of comparatively recent times, it was stated, these spells had increased so greatly in number and severity that he was having several attacks each week. In many of these unconscious states he had fallen and received minor injuries, and while not all of these seizures were

PHOTO FROM SKIAGRAM OF SKULL, SHOWING FRACTURE OF PARIETAL BONE.

of the grand-mal type, his wife recalled that on several occasions she had witnessed convulsive seizures during his sleep.

His family was greatly alarmed, however, concerning the condition he presented at the time of my visit. From them I learned that two days following the man's visit to my office he had been brought home in a dazed state of mind. Unfortunately, no one was at home to receive him and hence it was not until some days thereafter that the real truth of the condition he then presented was ascertained. Suffice it to say that he was supposed to have fallen and injured his head while at work in a factory and that his employer had seen to it that he was sent home. The immediate family and friends had noticed, however, that he was not quite himself during the evening, and so on the following day he was kept in bed. The gradual onset of a heaviness of mind alarmed his family and, as before stated, I was called to see the man four days after his visit to my office, and two days following his supposed fall in the factory.

Examination showed a beginning discoloration over the right mastoid area, and also a bruise about the left elbow. The head was very tender to pressure over the upper right posterior parietal region, but no depression of bone could be felt. The right pupil was somewhat miotic and reacted very sluggishly to strong artificial light. The left pupil was dilated but its light reaction was very prompt. There was no evidence of hemorrhage having taken place from either the ears or the nostrils. All of the deep reflexes showed no special change. The abdominal and cremasteric responses, however, were absent. While prompt plantar flexion of the toes was obtained on irritating the right sole, an indefinite Babinski response resulted when the left plantar surface was stroked. The external malleolar sign, or Chaddock's phenomenon, was present on both sides. The pulse rate was 60, the respiratory movements varied from 16 to 12 per minute and the axillary temperature as recorded on the right side was 95 3/5 degrees F., as against 96 3/5 degrees F. on the left side. When spoken to, the man could be aroused for a short time, and would attempt to fulfill simple commands. On protruding the tongue, the tip curved slightly to the left.

Realizing the grave and likely possibility of traumatic cerebral hemorrhage as a complication arising as a result of an epileptic seizure, I cautioned the family to watch the man closely for any change in his condition, particularly for a deepening of the hebetude or a more unfavorable action of the cardiac and respiratory functions. Although a previous urinary specimen, which I had obtained at the time of his visit to my office, had been free from pathologic products, I succeeded in obtaining a fresh specimen, which upon examination proved likewise negative, except for the presence of a small amount of glucose, a few red blood cells and cylindroids. No diacetic acid was present. I saw the man again some hours later, but no material change in his symptomatology had taken place since my previous examination.

On the following day the respiration had become more irregular and tended toward the Cheyne-Stokes type, the heart action remained still depressed and a slight variation in axillary temperature still persisted, the right being 97 3/5 degrees F., the left 98 degrees. The Chaddock and percussion toe signs could be readily obtained on both sides. Plantar flexion of the toes could be elicited on the right side, but no response was obtained on the left side. Ophthalmoscopic examination revealed no changes in the right eye, but the left nerve head appeared somewhat indistinct. The discoloration over the right mastoid process, or Battle's sign, was now distinctly marked. The mental faculties were entirely obtunded.

By this time there was no question in my mind as to the presence of a cerebral hemorrhage, and the removal of the man to a hospital was strongly urged. To this the family finally consented, but, unfortunately, a misunderstanding as to the ambulance service arose and the man failed to be moved, as I had hoped. When I again saw him some twenty-four hours later, the knee jerks were inhibited, but plantar flexion and Chaddock's sign were obtained on the right side, with an absent Chaddock, but a positive Babinski response, on the left side, and a failure to elicit extension of the great toe by the percussion method on either side. Although it was reported by the family that the man had talked a little at times during he day, yet it was with difficuly that he could be aroused momentarily at the time of my visit.

On the following day he was removed to one of the local hospitals where several days were allowed to pass in "watchful waiting" before a suitable skiagram of the head could be obtained. Suffice it to say, that his condition, mentally and otherwise showed some signs of gradual improvement during this time, and on the third day following his admission he was talking more than he had at any time since the onset of his stuperous condition some six days previous. Ophthalmologically, no changes could be detected in the right eye, and while the left nerve head still remained a little indistinct, no signs of increased intracranial pressure were detected. At this time I was greatly impressed with a clinical finding of undoubted diagnostic significance

which perchance I elicited as a matter of pure luck, rather than from any premeditated notion on my part. Percussion over the upper and posterior aspect of the right side of the skull gave a distinct "cracked pot" note, which, as I later discovered, was highly diagnostic of fractures of the cranial vault. That such a fracture existed in this case was confirmed by the skiagram which at last we succeeded in obtaining.

To my great surprise, however, new evidence was now introduced into the case and the old assumption that the injury had occurred some eight days previous, while at work in a factory, was shown to be entirely erroneous by the admission of a street railway employee, who stated that after alighting from a street car the patient was seen to fall without apparent provocation, and that his head had struck against the curbing lining the side of the pavement. The date of this unfortunate accident was on the 18th of September, 1915, which antedated by one day the time of the man's first visit to my office. The family then recalled that the patient had arrived home on the 18th in a somewhat confused mental state but they had taken no special heed of this fact inasmuch as such a state of mind as he then presented was not an unusual occurrence, following one of his epileptic attacks. A visit to the factory further corroborated the story as related by the railway employee, since it was then ascertained that the man had not had an attack either on the 20th nor on the 21st days of the month, the latter being the date on which his employer had sent him home on account of being what he termed "absent minded." It will thus be noted that the trauma evidently producing the fracture occurred on the 18th day of September but that the second period of unconsciousness did not occur until the 24th, or six days following the original injury.

On September 29th, or eleven days after receiving the injury, the man's oral temperature was 98 degrees F., his pulse rate 72, and his respiratory action 12 times to the minute. The knee jerks, while still inhibited, were not so depressed as formerly. On the right side, extension of the great toe could not be produced by the Babinski, Gordon, Oppenheim or percussion methods, but the same did respond to Chaddock's method. On the left side, both the Chaddock and Babinski signs were negative, but extension of the great toe was positive to the Gordon, Oppenheim and percussion methods.

On the following day, or twelve days after the skull was fractured, the posterior parietal and a portion of the occipital bones were exposed on the right side by means of a curved incision extending from the tip of the mastoid process upwards and backwards. A hair line fracture of some four inches in length was readily observed in the parietal bone, while a shorter and more delicate crack was seen to extend upward and forwards at almost right angles to the main fracture line. After opening the skull with a chisel, the chief fracture line was followed by means of ronguers down to the mastoid process. Although the dura mater did not seem very tense, there was a lack of pulsation. As the bone was gnawed away, no free serum was found extradurally, but the outer meningeal coat was seen to be stained with blood pigment, all that remained of a somewhat recent effusion. The dura was then incised in the region of the mastoid process and the insertion of a grooved director into the opening was followed by the escape of blood, somewhat thickened in consistency and much darkened in color. With the relief of pressure, pulsations of the brain became visible. Suitable drainage was provided for after which the scalp edges were united.

The post-operative course of the case was uneventful. Aside from a distinct sixth nerve palsy which developed within a day of two on the right side and which was accompanied also by a decided tendency to weakness in the action of the external rectus on the opposite side, no other changes of special note occurred. The weakness of the left sixth nerve cleared up within a few days, but the paresis of the right rectus externus persisted for a number of months but finally cleared up nicely.

While I realize that it may be entirely too soon to prognosticate the benefit which may be derived from surgical interference as far as the epileptic factor in the

case is concerned, I cannot help but feel that as far as the hemorrhagic phase of the case is concerned, surely surgical intervention was indicated, even though "one's days of grace had most been sinned away." Suffice it to say, there has as yet been no return of any epileptic symptoms after a lapse of twenty-six months, and the man declares he has not felt so well in twenty years.

To me the study of this case has been an object lesson in clinical diagnosis, and it well illustrates, I feel, the importance of getting a careful history, authentic in its entirety, that one may be better guided to the proper interpretation and correlation of clinical facts. That some difficulty in differentiating at times the post-epileptic confusional state not infrequently found following a grand-mal attack, from a confusional state sometimes observed following a concussion of the brain or a vascular crisis, hemorrhagic in type, needs, I feel, no special elaboration. Without a history, I dare say, such a differentiation may at times be extremely trying. That the difficulty is greatly increased where the possibility of two such conditions, so grave as the ones now under consideration, are likely to be met with in the same individual likewise holds true. Here the value of untoward ocular manifestations, cranial nerve lesions, increased intracranial pressure, blood tinged spinal fluid, and the hemiplegic state in such a differentiation are all clinical points, the absence or presence of which are of undoubted diagnostic significance.

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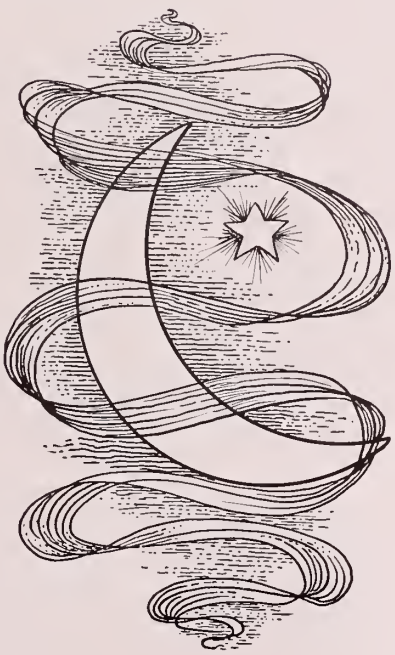

ETIOLOGY AND PATHOLOGY OF SCLEROSIS OF CEREBRAL VESSELS.

By

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IN the vast majority of cases upon which a post mortem is done, sclerosis of the cerebral vessels is found. Before taking up the causes of this condition, let us for a moment review the blood supply of this region. The large arterial trunks are represented through the basilar artery which sends its large branches, the arteriæ cerebelli superior and the arteriæ profunda cerebri, to the pons and brain stem. The artery of the fossæ of Sylvius supplies the center of the brain through the arteria corpus callosi and the lenticular artery.

The arteries given off at right angles from the fossæ Silvæ are end arteries, that is, the brain tissue surrounding them has no possibility of a collateral blood supply. This explains why disease of the basilar arteries presents the same clinical symptoms, namely, hemiplegia on one hand and pontine affection on the other hand. It is a question depending upon the degree of narrowing of the lumina of these vessels. Naturally we expect to find variations of blood pressure with disturbances of nutrition in area supplied, which produce dizziness, transient paralysis and slight clonic contractions without clouding of consciousness, so often observed.

To what is sclerosis of the cerebral arteries due? Is it heredity?

1. Williams (*Journal of Medical Diseases*, September, 1917) reports that THIRTY-EIGHT CASES OUT OF 100 HAD 56 ARTERIOSCLEROTIC RELATIVES AS FOLLOWS:

PATERNAL.		MATERNAL.	
Fathers	10	Mothers	7
Grandparents	7	Grandparents	11
Collateral	6	Collateral	10
Total	23	Total	28
Brothers and Sisters	5	Children	0

2. Is alcohol a contributing factor? All cases of chronic alcoholism show more or less pathological changes in the brain mostly noted as the so-called wet brain or serous pachymeningitis.

3. *Sex.*—Males are more affected than females. This is not due to any special predisposition but to the fact that greater exposure on account of occupation, habits and conditions of life have a tendency to affect blood pressure injuriously. Day laborers, blacksmiths and miners are apt to develop sclerosis at a much earlier age than men engaged in less strenuous tasks. Strain of the vascular coats by severe and oft-repeated muscular effort, cannot be ignored in the production of sclerosis.

4. Neurasthenic individuals are prone to arterial degeneration as a result of alterations in blood pressure associated with unstable and excitable nervous states.

5. Sedentary pursuits, with consumption of more food than activity demands, is an important factor to be considered.

6. Persons suffering from migraine due to an increased arterial pressure often show sclerosis of the arteries on side of head affected by pain. Long continued high blood pressure cannot but produce injurious effects resulting in degenerative changes taking place in the cerebral arteries.

7. Syphilis is the most important and usually results in the obliterating endarteritis so often recognized.

8. Chronic lead poisoning and gout also contribute to degenerative changes in the cerebral arteries.

Out of 110 autopsies done at the Norristown State Hospital only three give alcohol as a contributing factor directly.

Sixteen cases diagnosed as Paresis give a distinct history of primary infection, while twenty-four psychoses with gross Brain Lesion show arteriosclerosis of cerebral vessels to be present.

By far the largest number, 54 in all, were found in the senile form of psychosis and brings out the factor mentioned previously in this article, viz.: that it is a question depending upon the degree of narrowing in the lumen of these vessels, since senile change is in a way a physiological function. The majority of these patients had strenuous occupations before admittance to the hospital.

Epilepsy shows cerebral arterio-sclerosis and is probably a result of the continued congestion produced by the convulsive seizures. In two cases of Infective Exhaustive psychosis arterio-sclerosis was present.

Of course, Dementia Præcox of long standing is bound to show some thickening but not to such a marked degree as those which have a distinct contributing factor.

This may be accounted for in the sedentary life those patients live and total lack of exercise.

Pathology.—The accompanying photograph from post mortem (No. 1702) specimen, shows the marked thickening and tortuosity of the cerebral vessels, together with thrombatic softening of the left tempero-sphenoidal lobes. The dura was very much thickened and over the inner surface of the base a thin hemoglobin-stained membrane was found.

The convolutions were markedly shrunken and narrow. In the left Rolandic fissure involving its upper half entirely and in the middle of the post Rolandic region was found a collection of fluid. A collection of fluid was also found in the Fossæ of Sylvius and partially exposed the Island of Reil. On the median surface of the prefrontal convolution and also the upper portion of the right cuneus smaller quantities of fluid were also found. Associated with this was an atrophy of the convolutions. Over the middle of the right precentral Gyrus, the pia-arachnoid showed an opaque patch of thickening. The lateral ventricles were very large, and a grayish depression was found in the head of the caudate nucleus. This case shows the vessels at the base of the brain to be extremely tortuous, of large calibre, and studded with almost continuous yellow and white plaques which extended into the smaller branches, as well as the gross changes found in the circumscribed form of sclerosis involving the cerebral arteries.

As the above case shows, the morbid changes which take place consist essentially in a degeneration of the media with a secondary compensatory thickening of the intima. The sclerosis may be localized or diffuse. In the nodular or circumscribed form the inner surface of the vessel affected is covered with whitish or yellowish patches which stand up from the surrounding tissue and are of a rounded contour.

In the diffuse form the arterial wall is stiff and more or less dilated, while on the surface of the intima, zones of nodular thickening associated with calcareous and atheromatous patches present themselves. These are the so-called pipe stem arteries so often spoken of by the clinician.

The middle coat changes lead to a weakening and dilatation of the artery and consequently thickening of the intima. The intima becomes thinned as a result of atrophy and degeneration of its muscle fibres. Associated with this is a more or less extensive destruction of its elastic elements. This disappears entirely in some cases and is replaced by connective tissue.

Round cell infiltration occurs especially affecting the adventia of the vaso-vasorium. The investing membrane becomes tough and of increased thickness.

Microscopically, the intima shows an over-growth of connective tissue between the endothelium and underlying elastic tissues. Degenerative changes occur in this new-formed connective tissue and consists of a hyaline transformation of the outer portion with areas nearer the endothelium of the fine detritus in which numerous fat droplets are seen.

When this stage is reached a so-called atheromatous abscess occurs. Then they break into the lumina of the vessel, depressions occur leaving an ulcerated area. These ulcers have rough borders and bottoms and are liable to become the seat of septic thrombic. As the process continues a calcareous change occurs in which lime salts are deposited, and with the formation of this chalky material in the wall, the artery may become transformed into a tube of almost bony hardness.

In conclusion, would say, that syphilis leads as an etiological factor in cerebral sclerosis, secondly, alcohol, followed by strenuous occupations resulting in high blood pressure—all are important factors.

To heredity, sedentary life and high living, together with a neurasthenic makeup, worthy consideration should be given.

As to forms of psychosis with sclerosis of cerebral vessels predominating, reports from the Pathological Department show out of 110 cases the following:

Syphilis as an etiological factor	16	cases
Alcohol as an etiological factor	3	cases
Epilepsy as an etiological factor	11	cases
Infective Exhaustive Psychosis as an etiological factor	2	cases
Senile Psychosis as an etiological factor	54	cases
With Gross Brain Lesion as an etiological factor	24	cases
Total	110	cases

One hundred ten cases out of 1,728 autopsies done, extending over the period of years from 1884 to October 1st, 1917, show sclerosis of the cerebral arteries to be existing. Education regarding these etiological factors is necessary to prevent this disease becoming more prevalent in future generations.

EDITORIALS.

Conducted by

MARC RAY HUGHES, M. D., DAVID S. BOOTH, M. D., BAYARD HOLMES, M. D.

EDUCATING THE LAITY IN MATTERS MEDICAL.

Early in our professional career, we became convinced of the desirability of enlightening the laity in many matters pertaining to medicine, a conviction which has grown with years of observation and revealed from time to time in our pages; therefore we approve the running of a properly conducted medical department by lay publications, but, as often conducted, it is doubtful if they are rising to their opportunity for good—in fact, it appears they are often productive of harm.

Great good may be accomplished by instructing the laity upon such subjects as sanitation, personal hygiene, the causes and propagation of diseases, the laws of heredity, natural and acquired immunity, the insidiousness of chronic diseases, the necessity for occasional physical examinations, the *vis medicatrix natura*, etc., and perhaps, above all, the rationale of scientific medicine, in contradistinction to the plausibly presented claims, but dangerous practices, of the various system, sects, and cults which have in all ages harassed medical progress which has, notwithstanding, kept pace with the progress of all other arts and sciences.

The medical department of lay publications is usually conducted by a physician who prepares brief essays upon medical or quasi-medical subjects, and makes diagnoses and gives professional advice to correspondents from descriptions of their subjective symptoms or gives advice or comments upon the diagnoses of an unknown source.

While these medical editors may be physicians of learning and repute in a special branch, they too often appear in the role of a "universal specialist"—possibly a "Pooh Bah" of the vernacular; nevertheless, by virtue of their office, the lay readers often, if not usually, accept their opinions as *ex cathedra*, to the detriment of the general medical profession, as well as to the science of medicine itself, and often with harmful, if not serious, results to themselves.

One of the most detrimental precepts is that it is possible for a physician to diagnose disease with any degree of certainty from one or more subjective symptoms, or that, having the diagnosis, he can advise treatment which may be successfully or safely followed by a layman.

Instead of "stalling" by making diagnoses "per saltum" "sight unseen;" we should rather impress the laity with the necessity for thorough examinations and searching investigations.

Furthermore, the laity should be taught that results do not depend so much upon the remedies as the manner of their use. Craftsmen may use the same tools with very different results.

In order to bring before our readers the fallacy of some of this advice, we herewith produce a few questions and answers from one of our daily papers, the medical department of which is edited by a physician of good professional standing.

"H. H. writes: Kindly let me know what you think of veronal tablets, five-grain, taken to induce sleep. Are they habit-forming, and would they be harmful to a person who has been ill a long time and is very weak? What are they composed of?"

"Reply.—Do not take veronal or any other medicine to induce sleep. Once you

begin tugging to induce sleep you will be chained to the wheel. Veronal is a synthetic compound of the type ordinarily referred to as a coal tar derivative."

Had this advice been limited to self-medication, one could agree with the first sentence, but we are not willing to subscribe to prohibition so broad that it prevents the competent physician using hypnotics, or that will deprive the afflicted from having them prescribed when indicated.

To prohibit the use of such valuable remedies in order to prevent their use by the laity, would be parallel to the prohibition of the use of firearms and cutlery, as well as of many ordinarily harmless articles, such as clothing, rope, bed-clothes, etc., because occasionally people use them to commit murder or suicide.

"Mrs. M. M. writes: Have a pain in the back of my neck where the nerve enters the skull. The pain seems worse at night. What is the cause and significance of said pain and what treatment would you advise?"

"Reply.—A mild chronic pain in this location means neurasthenia, nerve tire or worry. The best treatment for you is rest. If you can get away from home for a rest it would help. If you could spend the winter loafing in California it would cure you. In the meanwhile, the less you talk about the pain, the less you think about it, the better you will be."

We should envy the physician who has the diagnostic acumen to make the diagnosis in this case, viz., neurasthenia, uncomplicated or not caused or perpetuated by one of many focal diseases which frequently accompany the functional neuroses.

Furthermore, it is to be recalled that such pain is a symptom of various other conditions, notably:—melancholia, meningitis, brain tumor, especially cerebellar, nephritis, epilepsy, dyspepsia, diabetes, syringomyelia, uterine disease, cervico-occipital myalgia and neuralgia, disease of cervical vertebrae, disease of pharynx, especially adenoids, status lymphaticus, carious teeth, and middle ear disease; from which one may readily appreciate the diagnostic skill displayed, if the guess proves correct.

"Mrs. M. E. B. writes: Three years ago I became afflicted with paralysis agitans. At first it was in my left hand and arm. Now my other hand and arm and lower limbs are affected. * * * I cannot stand very much exercise, as I become weak. Am 76 years old and for several years have been troubled with constipation. * * * What would it be better for me to do in relation to diet and constipation? My doctors say there is no help for paralysis agitans."

"Reply.—There is nothing that you can do for your paralysis agitans, but it is slowly progressive and may never disturb you excessively. Try to overcome constipation by eating freely of vegetables, fruit and bran bread. If this fails, use agar and mineral oil."

This advice to one afflicted with a disease which is characterized by mental depression appears as cruel as it is unjustifiable, since paralysis agitans may usually be greatly alleviated and the patient made comfortable. We have seen patients made comfortable for years, and the symptoms so controlled as to be almost unnoticeable.

"J. W. S. writes: Will the continued use of cascara sagrada and sodium bicarbonate as a laxative be harmful?"

"Reply.—It will."

The proper reply in this case will depend upon the construction placed upon "continued;" accepting the usual meaning, "without interruption;" the reply appears erroneous. If we accept the meaning "without end," then the reply is correct. However, since the query does not convey the writer's intention, it appears such an explanation should have been made to prevent error.

Since cascara sagrada is a tonic-laxative, its greatest therapeutic value is in chronic constipation, in which it should be given "continuously," i. e., without interruption, but should be taken only under the supervision of a competent medical attendant who would

first ascertain if the remedy be indicated, i. e., if the condition for which the remedy was to be taken was not secondary to some general or focal disease requiring other treatment, and who would regulate or combine the remedy to overcome the condition, so that it would be unnecessary to take it "continually."

Sodium bicarbonate, likewise, must often be given continuously; and so with all but a few drugs given for temporary relief of symptoms; and herein lies the cause of frequent therapeutic failures, since the laity already fear "drug habits," hence themselves often intermit medicines which are prescribed for constant use. In other words, laymen confound "continuous" and "continual," and by not following treatment "continuously," thereby obtaining a cure, must take something "continually," to obtain relief.

"Worried writes: I am a big league ballplayer by profession, but since the last of June have been out of the game on account of nervous prostration. It came on me suddenly and has caused me much anxiety. I do not smoke, drink, or follow any ill habits whatever. Could you kindly give me some advice as to the cause?"

"Reply.—Nervous prostration is not the result of smoking or drinking. These habits have all the load to which they are entitled. The bad habit which caused nervous prostration is a habit of mind. It may be worry, or fear, or introspection. The only cure is to cure the mental habit which underlies it. Persons who are intensely interested in their work seldom have nervous prostration. People who are fearless are free from it. These are suggestions merely. Just what the cause is in your case I do not know."

"P. H. writes: My wife, 40 years of age, for many years has had hysterical turns, with severe headaches. She says she has a smothered feeling, cries out, and imagines she is going to die. She worries too much. Takes these spells almost weekly. Otherwise is in fair health. The doctor says her heart is not the cause; may be from her liver. I wish to get her a good tonic. What would you recommend?"

"Reply.—The only treatment worth while is mental and social. Medicine does no good."

We cannot subscribe to the opinions expressed in these replies, which do a great injustice to suffering thousands, and which disregard the primary physical basis, viz., the debilitated, hence over-wrought, nervous system, of which the psychic centers of the brain are especially involved; as a result, there is increased irritability, i. e., increased reaction to environment, with introspection and worry, which exaggerates the existing nervous debility until, untreated, exhaustion is the outcome. However, the primary element of this vicious cycle is the neuron debility, with the consequent increased irritability, which can be cured certainly, rapidly, and permanently only by physical means, though often necessarily accompanied by mental treatment, viz., psychotherapy, to allay the mental stress.

All these replies ignore the essential feature, viz., that treatment, whether by drugs, diet, hygiene, environment, or "mental healing," should be under competent professional supervision. In other words, the laity should be taught that it is the individual and not alone the disease that is to be treated, and this requires knowledge, skill born of experience, judgment, tact and resourcefulness personally applied by the attendant. Anything short of this is guess, pure and simple, notwithstanding it may be a good guess.

D. S. B.

SEX AND EPILEPSY.

Epilepsy is an encephalic disorder due to the explosive activity of an unstable vasomotor center attended by dazed consciousness or complete unconsciousness, accompanied by phenomena expressive of the undue action of certain cerebral centers and the suspended inhibitory powers of others. In all epileptic phenomena the etiologic moment

is dominant. The epileptic constitution is the essential feature. It is difficult to see how the Freudian procedure can play a part in the therapy of epilepsy. The epileptic, moreover, has marked suggestibility and auto-suggestibility. Smith Ely Jelliffe* is of the opinion that "the profundity of unconsciousness in epileptic convulsions is an indication of the depths of the ego unconsciousness to which the impulse of the psyche drives the patient and which not only exercises periodically an overwhelming power over conscious control but which colors modes of acting, speaking and thinking, even these which might be accounted trivial and unimportant in a superficial estimate of the personality." There is just as great a complexity of the emotional life, with its strivings for expressing conflicts which this creates, and compromised attempts at solution as is found in the building up of other psychic disturbances but within it all the ego center magnifies itself to the shutting out of other interests which might afford healthful occupation for the libido, and to the causing of an inability to follow the avenues which would afford a saving contact with reality. It does not form a phantasy world which holds a satisfying substitute for reality, as in certain psychoses, but, thwarted in its ego, reactions must retire deeply within an unconscious world which probably corresponds rather to the earlier infantile condition where even phantasy formatiton is not yet exercised in any great measure of variety.

Maeder in particular has pointed out in detail how this poverty of the effect life is yet accompanied by an apparent effulgence of emotional life, but at the same time he reveals the lack of depth and reality in these manifestations. So that religiosity and not religion, effusive piety instead of sincere morality, become marked characteristics. A compulsive form of epilepsy evinces a concern for elaborate devotion to the detail of confession and of ceremonial prayer, is an excessive devotee of those external forms of the Church, measures everything according to its formal standards of "sin," but manifests no evaluation of actual workable moral values. The manner of life is one of strict observance and rigid morality, but there is no sense of a duty which would involve an outgiving of self in service toward others. Indeed, the compulsive form of religion, closely bound with the attacks, both grand mal and petit mal, so occupy the patient and so incapacitate her for an active life that she is kept quite dependent upon the support and ministrations of her family.

The love life, as Maeder also shows in his discussion, manifests the same traits. There as an excess of infantile activity in all of its forms, but not the depth toward which, according to Freud, the various stages of development of the love life must contribute. The adult goal of a profound channeling of love into a life of creative service is not the epileptic ideal. Hence the infantile enthusiasm which expends itself again in the superficial expressions of love and erotic enjoyment, not only self-centered and autoerotic, but incapable of seeing beyond the horizon of such pleasure, winning into the mutual relationship which adult love requires. Maeder has called attention to some of the grosser manifestations of the various forms of the infantile erotic as they appear in those patients advanced to a greater or less degree in their dementia. Some of the cases which present themselves for analysis long before such a stage is reached, present a less gross, but no less significant illustration of these same tendencies. Indifference to serious marital difficulties, in one patient, exclusive emphasis upon the pleasant externalities of love with another, an excessive childish pleasure in motor activity, and more an extravagance of urinary enjoyment, a veritable urinary megalomania, in dreams, and in actual practices, are some of the superficial forms of enjoyment which seem to have usurped the place in which normally deeper more adult pleasure should have come to its own.

The unsatisfactoriness of such libido outlets in the face of a hard reality with its demands for something of a far greater abiding depth already grants an insight into the

*New York Medical Journal, July 27, 1918.

reason why only the remote unconscious goal of the profound attack provides a sufficient refuge for such infantile seeking. It forms a yielding background to the inevitable conflicts of life, conflicts multiplied and rendered less supportable by such an infantile nature. It is necessary, however, to discover more in detail in just what the conflicts themselves lie.

Here once more we shall find that we are dealing with the universal unconscious. There is no sharp distinction, clinically considered, to be made between one class of persons and another. Perhaps, after all, it is merely this constitutional difference of the exaggerated ego and the shallowness which that spreads over the personality, which separates the epileptic reaction from that of the forms of reaction in other psychic disturbances or in those we call normal. "We all have traces," MacCurdy says, "of the epileptic reaction when we give way to temper, choose the easier path, or allow our egotism to sway our judgment." Still more might we say that we all have the same conflicts arising out of the impulsive and instinctive tendencies of the (unconscious) affect life, and the effort of the conscious to control these for useful and social purposes. Though the epileptic's form of reaction may be peculiarly his own in its absolute control by the unconscious, at times, of his sensorimotor and even metabolic processes, we can best understand the reason for this absolute power on the part of the unconscious and its increasing domination toward final dementia if we examine by detailed analysis each individual set of complexes and conflicts as each individual patient presents them. Only thus can we come to a better knowledge of the epileptic reaction itself, and finally to a control over it.

Various writers have recognized the emotionally psychical character which underlies the disease manifestations. Flournoy has reported in detail the emotional history of a patient who repeated in her attacks the details of a scene of violence with her husband, who was the precipitating cause in the first place of the epileptic disturbance. He believes from the unconscious material discovered in hypnosis that the crises "represent in the beginning, like so many other emotional manifestations, certain reactions of defense." Flournoy separates out thus, a special form of epilepsy which he distinguishes as "emotional epilepsy," and discusses a hysteroepilepsy or epileptiform hysteria, and also the possibility of a mixed form. Stekel likewise, who has published some very instructive analyses of epileptic convulsions due to psychic conflict, believes "that a goodly number of so-called epileptics are doubtless only neuroses and hysterias." Other authors show the same tendency to designate the epilepsies which prove themselves thus unmistakably pyschogenic as hysterias rather than true epilepsies.

This distinction seems not well founded, and, indeed, needless, in the full acceptance of the energic concept. For this necessarily recognizes the psychogenic basis for the epileptic condition (as the most essential thing), and may perhaps in time prove it for all genuine epilepsy, while at the same time it admits of a complexity of reaction. From the point of view of the complex phychogenic determinants one could not even look for a simple interest through this, and the peculiar measures which must be employed to seek out and entice this interest from its hiding places and guide it to a broader reality which means health. It is to the studies and the practical clinical work of Clark and MacCurdy that we owe such a setting forth of the problem and such a practical approach to it.

This is but a beginning, however, of the more extensive occupation with epilepsy to which the medical profession must direct its energies. These men have proved it worth their while to devote to the psychical aspect the effort which still knows not where to attack efficiently upon the basis of physiological symptoms. Other investigators also have thrust in opening wedges to a better understanding of the reaction which makes for epilepsy and of all the psychic character which underlies it. These are all, however, but indications as to where we must press forward. They guide us in the direction of the search for the energy gone astray. They suggest that only a thorough analytic

research into the epileptic's psychical nature will discover the wrong adjustment of that energy, the reason for a reaction at odds with the real world. It is necessary to discover why the symbol carrier of this energy is other than that which would so distribute it that in the physicochemical sphere, the vital sphere, and the psychical there would be perfect harmony and efficiency. Therefore, there is fond reason to hope that what Freud has so concisely designated "the most exhaustive occupation with the complexes, and making them fully conscious" will prove itself the ideal for obtaining knowledge of this deeply grounded epileptic reaction, and for releasing the victim from a fate of inevitable deterioration to a life of usefulness and health.

This will mean the following of no royal road of easy and quick discovery any more than of a ready substitution by the patient if a well directed life for one sorely at odds with his environment. It will not necessarily result in the complete well rounded life. The peculiarity of the epileptic constitution which has chosen its mode of reaction is too far reaching, perhaps, for that. But it does aim at a very workable adjustment, not the least, perhaps, because the method of psychoanalysis is such a thoroughly cooperative one on the part of the patient and makes the most reasonable and highest demand upon the guiding and controlling of his emotional and instinctive life by an intelligence which even sets this at a new value.

There is promise, therefore, both to patient and to the profession in this approach. It will involve infinite patience and the willingness to evaluate and handle details of psychic investigation and responsive aid on the part of the physician as circumstantial and minute as is the content of the epileptic thought and life. It necessitates, further than this, a keenness of attention and an alertness to the fascinating shiftings and interchangings of energy, which we are coming to realize do actually exist in this complex mechanism which we call the inter-relation of body and mind. That, as had been stated, must never here, at any rate, be left out of account. The chief manifestatiton of epilepsy is the sensorimotor attack,. No less actual, although less uniformly frequent, are the disturbances of metabolism, while behind these is always the possibility of the organic lesion which is perhaps the original mark of the insufficiency of the organism for its task, or which may later accompany the distinct psychic inadequacy. These represent the variety of manifestations of the imperfect energy distribution, the very concrete pathways of its faulty discharge, as well as the results of it. Impairment or lack of development offer easy pathways of discharge for the equally imperfect, undeveloped wish.

For with our knowledge of the unconscious and the harboring there of infantile wish impulses and immature tendencies seeking expression in a world of reality to which they do not belong, we cannot be surprised to find in the field of our search not only a strong infantile wish tendency fighting for fulfilment, but a complex entanglement of such wishes in the case of the epileptic, even more intensively and exclusively egoistic than we have come to recognize generally in the investigation of the unconscious mental life. The profundity of the unconsciousness in the classical epileptic convulsion is an indication of the depths of the ego unconsciousness to which the impulse of the psyche drives the patient, and which not only exercises periodically such an overwhelming power over conscious control, but which colors all his modes of action, speaking, and thinking, even those which might be accounted trivial and unimportant in a superficial estimate of the personality.

It seems worth while, then, to submit the epileptic's problem to the investigation and therapy of psychoanalysis. Peculiar difficulties will be met with in the way of accomplishing a thorough analysis, but we believe also that peculiarly important results will be obtained. The approach to the heightened egocentricity of the epileptic personality is not a ready one, or, superficially and apparently easy, it is found to be based upon an openness on the part of a shallow egoism which makes a quick, but

meaningless rapport with the superficial features of the environment. There is a certain offhandedness which bespeaks a superficiality of affect as well as a limitation of interest to the egoistic point of view. This is not alone a trait of advanced epileptic deterioration, but impresses one when the patient is yet fairly active in his environment and the disease has not made itself manifest beyond the periodic attack. This demands of the psychoanalyst greater expenditure of interest or libido on his part in order to stimulate and maintain interest, as well as to create for himself enthusiasm in his research, and in his attempt to rouse the patient to cure. There is not the same readiness toward the transference as found in other conditions, and which forms so important a recognized factor in the psychoanalytic treatment.

This, on the other hand, by no means signifies that there is no emotional content to be reached here. There is just as great complexity of the affect life, with its strivings for expression, conflicts which this creates, and compromise attempts at solution as is found in the building up of other psychic disturbances, but within it all the ego center magnifies itself to the shutting out of other interests form of symptom phenomena, but should rather expect that variety of emotional reaction which is met in practically every psychoneurosis.

Besides, for the practical purposes of an analytical investigation and therapy, this distinction is of little moment. The problem remains the same, namely, whether or not such a method of "exhaustive occupation with the complexes" is going to discover and redirect the wrongly distributed and applied energy, and it is here that the valuable detailed reports of just such work, under whatever name, come to our aid and point the way that we must follow.

Jung and others have utilized the association tests for an approach to the epileptic character, while Maeder, Sadger, Stekel, Riklin and other psycho analysts have subjected the same character to detailed observation and analysis. The results which they have reported emphasize the egocentricity, its diffusiveness and the consequent superficiality of emotional states even in their apparent extravagance, and the poverty of interest in external objects. The epileptic seizure reveals itself as a substitute for deeply concealed impulses of an infantile and asocial nature. In Stekel's cases a strong criminal tendency reveals itself through the analyses. Strongly repressed from consciousness it had therefore created the disturbance of the unconscious which resulted in seizures. The analyses brought to light murder instincts or incest wishes for which compulsive thoughts and actions had to atone in consciousness; or a strong sadistic masochistic nature was revealed which also defended itself in part by a symptomatic manifestation. When the entire complex, however, was strong enough to break through, an epileptic seizure was the result.

In some instances the convulsion represents a direct flight into sexuality, the loss of consciousness being comparable to an orgasm, a conclusion which has long been held and which is further confirmed by Maeder's studies in the sexuality of the epileptic. These particularly stress the infantile character of the sexuality of the epileptic, with whom any one of the infantile undeveloped forms of the psycho-sexual life are exaggerated and form a barrier to adult development and reveal his difficulty in attaining to the normal sexual life or to a sublimation of it."

The Freudian philosophy here expressed excludes entirely all clinical research which makes epilepsy a purely vaso-motor explosive condition with real unconsciousness or dazed consciousness and contends that there is an organized psyche behind all phenomena which can be appealed to by psychanalysis.

The clinical evidence entirely destroys the claim that the sexuality of the epileptic is infantile either in the Freudian or in the more scientific sense. J. G. K.

SELECTIONS.

CLINICAL NEUROLOGY

Hysterical Disorders of Micturition.—J. W. Moore, *Seale Hayne Neurological Studies*, November, 1918, contrary to the previously generally accepted view that hysterical incontinence does not occur, reports two cases of hysterical incontinence of traumatic origin and two cases dating from infancy. The author considers these cases to have been genuine because they were cured by psycho-therapy, and owing to the great distress occasioned the patients and their relief upon being cured.

Case 1. Complete incontinence of two years' duration, following injury to the back, primarily organic, ultimately hysterical, and cured by psycho-therapy.—Pte. D. M., aged 19, with no previous history of incontinence, was buried as a result of a shell explosion in June, 1916, his back being painfully injured. For a few hours he was partially unconscious and could not stand. From the first he wet his clothes, and he reported sick for this reason three days later. While in the hospital he developed incomplete paraplegia. When he came under observation two years later, he was still incontinent day and night, and for over a year had worn a urinal apparatus attached to his leg. He had two of these, one for night, the other for day. Abdominal reflexes were absent and the plantar reflexes, extensor, indicating that there was still some organic lesion in the spinal cord and that the incontinence had originally been organic in nature. His gait was slightly spastic. He was assured that his condition was curable. He was deprived of his apparatus, but kept in bed with a urine bottle handy. He was instructed that at the least desire to micturate he should use the bottle, but he should hold back the stream as long as he possibly could. Ability to delay the act rapidly developed, but he still wet his bed about five nights a week. For this he was treated three nights in succession by hypnosis, and again for two nights after an interval of a few days. This completely cured his nocturnal incontinence, and he now (November, 1918) has had no difficulty at all for four months, and usually sleeps through the night without having to empty his bladder. The abnormal physical signs are still present, although his gait is now quite natural.

Case 2. Hysterical nocturnal incontinence, following injury to the back, cured by psycotherapy after persisting for seven months.—Pte. P. M., aged 29, has no history of previous incontinence. He was blown up in March, 1918, and a piece of concrete dropped on his back. After this he could not control his bladder day or night, and had hysterical contracture about the left hip, which resulted in a bad limp and inability to touch the ground with the left heel. The diurnal incontinence soon disappeared spontaneously, but he continued to wet his bed every night until admitted to Seale Hayne seven months later. Both the hysterical gait and incontinence were cured on the day of admission. Recovery was permanent and he returned to duty.

Case 3. Hysterical diurnal and nocturnal incontinence dating from infancy, cured by psychotherapy.—Dvr. M. T., aged 27, had wet his clothes every day and his bed every night for as long as he could remember. The desire to urinate came suddenly, and leakage occurred before he could reach a urinal. In other respects he was quite a normal individual. By getting up six or eight times in the night he could sometimes avoid wetting his bed. He served over two years in France, and returned to England for neurasthenia, which was caused largely by worry over his bladder condition, as he was teased by his companions. At Seale Hayne the incontinence disappeared entirely after treatment by hypnosis, and he now urinates only four times daily and not at all during the night.

Case 4. Hysterical nocturnal incontinence of many year's duration, cured by psychotherapy.—Sergt. D., aged 32, had nocturnal incontinence from infancy until the age of 18. Then for ten years he was free from it while living in Canada. At the age of 29 he came to France with Canadian troops, and after a few months again became incontinent at night. He also occasionally wet his clothes in the day time. After this had persisted nearly three years he was admitted to Seale Hayne and quickly recovered with re-education combined with hypnosis on three evenings.

Alcoholic Argyll Robertson Pupils (?)—Alcoholic Psychosis Simulating Neurosyphilis.—Karl A. Menninger, *Amer. Journ. of Syphilis*, April 1919, reports an instance of the association of the Argyll Robertson pupil and other reflex changes commonly associated with neurosyphilis in a patient not suffering from neurosyphilis, or from influenza, or from dementia precox. The only demonstrated etiology was acute alcoholism. With the fixed pupils there was a speech defect, a paretic facial expression, tremulous tongue and hands, unequal knee and ankle jerks, and a rather defective memory. An outline of the case follows:

An Irish-American longshoreman of fifty was received at the Boston Psychopathic Hospital with a history that he had been "brought in by the police, fought viciously, and would not speak." The following morning he gave his name and age, but no further information. Later he gave his birthplace, his parentage, his occupation, and admitted excessive alcoholism. He was at this time somewhat irritable, but answered the necessary questions with the addition of a certain amount of wet humor.

A short time afterwards he was seen in the wards, gave his name as "B. Y. Sullivan," disclaimed knowledge as to the date or place and said he had been here about six months. The following day he was still somewhat restless and showed gross judgment defect, such as expectorating upon the floor. At no time did he show any evidences of decreased sensorial receptivity.

A mental examination was made on the third day. He was accessible and fairly co-operative, rather dull, somewhat surly, but not discourteous; orientation was precise in all spheres; amnesia for recent events; a more or less patchy defect of memory and his calculating ability and retention of school knowledge were very poor. Admitted having had delirium tremens several times, but denied sypphilis. Of the present attack he remembered only that he had left work to go on a vacation, had come to Boston, and had entered upon a long spree, and that he was arrested by the police. He recalls a vague delusion that he was playing some sort of game in the way of throwing pieces of paper on the floor. No persistent delusions or hallucinations. His insight was good; his attention somewhat wavering; associations rather slow; emotional tone fairly normal and motor status quite so.

Physical examination showed him to be a heavy jowled, powerfully built man with a smooth, ironed-out face, with a coarse tremor of the hands. Pupils were round, regular, the right slightly larger than the left; both were typical Argyll Robertson pupils, reacting to distance, but not at all to light. The arm reflexes were lively, but equal. The right knee jerk and ankle jerk were greater than the left. There was no other important physical findings except for some thickening of tibial periosteum and a blood pressure of 150-90. There was a distinct speech defect, particularly with the conventional test phrases.

The history is distinctly that of an alcoholic psychosis; the physical findings are conspicuously those of neurosyphilis. The mental symptoms are compatible with either.

The spinal fluid showed no globulin, a normal quantity of albumin, one cell, and a negative gold sol reaction. The Wassermanns on both spinal fluid and blood serum were negative.

The man was discharged on the ninth day with a diagnosis of acute alcoholic psychosis, recovered.

STAMMERING: ITS CAUSE AND TREATMENT.—Charles G. Stivers, *Southern California Practitioner*, March, 1919, contends that the distinction between stammering and stuttering is purely artificial. Stuttering is usually defined as a form of defective speech, manifesting itself in repetition of the initial consonant. Stammering is defined as a form of defective utterance characterized by strangulatory and compressive effort, or as any minor form of speech-hesitation, that is not stuttering. Much of the confusion has arisen in these definitions through English and American authors translating the German words *stammeln* (lalling or baby-talk in its milder forms) as stammering. In this article the word stammering is used to refer to all forms of speech defects except lisping.

The fact that the stammerer utters many correct consonant sounds proves the trouble is not with consonants but with the vowel sound. The consonant is prolonged and repeated—the stammerer begins again and again trying to get to the vowel, but as he does not remember its sound he cannot reproduce it. There is never any trouble with a final consonant.

That the trouble does not lie with the consonant, but with the vowel, is borne out by the fact that the stammering occurs when the word begins with a vowel. There may be as great difficulty pronouncing I as Pie. Stammering occurs though there be no consonant in the word at all and with the vowels, as I and A.

Stammering is almost never met in singing. Songs differ from speech mainly in the method of vowel production, while there is no great change in the consonants. The absence of difficulty in singing indicates that the vowels give rise to the difficulty that leads to stammering. The stammerer's difficulty is due to failure to remember the sound of and to produce the vowel, but is not due to a lagging of the laryngeal action, as may be seen from the fact that stammering should disappear when the subject whispers—there being no phonation in whispering. The fact is, however, that over 65 per cent. of all cases stammer even in whispering. The trouble then does not lie with the production of *voice* as such.

That the difficulty is not one of vocalization is shown by the fact that stammering may occur in the effort to produce the word *many;* when the M is made a continuous humming or musical sound there is no delay in larynx action.

Stammering then is clearly associated with production of vowel color, or vowel quality, or in other words, the stammerer forgets what the vowel sounds like, so he cannot utter it.

The stammerer relies on for aids, in his speech, both the feeling of the sound as he utters it, and the remembered quality of the sound desired.

Very nearly 3 per cent. of all school children have some speech defect, either stammering or lisping. In Los Angeles Public Schools there are about 3,000 children who are victims of this distressing habit. The stammerer is not usually mentally dull, but owing to his inability to recite in public, and to his nervous instability he cannot advance with his class and so is retarded from two to three years.

Stammering is very much more common in boys than girls, and much harder to cure. It is rare to meet a woman who stammers, but men are quite frequently the victims of this serious handicap.

There is usually some mental bias or external evidence of nervous instability in the stammerer. He is often a highly imaginative child, and given to coloring his tales, or actually telling lies and evading responsibility. The fact is that there is a pronounced psychological factor in all cases, and no study or treatment of stammering will be successful that fails to take into account the unstable nervous system and adopt measures to restore its balance.

Stammering is quite often associated with a low grade mentality. In the ungraded school rooms are found a large per cent. of stammerers for two reasons—first, they cannot keep up with their unhandicapped fellows, and second, the quality of their mental and physical endowments not being up to normal, they cannot compete successfully in a struggle with studies mainly designed for normal children.

In the treatment of stammering, physical defects must be remedied as far as possible. Hypertrophic cryptic tonsils containing foci of infection, from which poisonous toxins are constantly given off, thereby lowering the bodily resistance, should be removed. Care must be taken that the removal is skillfully done, that permanent injury to the muscles used in speech be not inflicted.

Adenoids, post-nasal hypertrophies, septal deviations, tongue-tie, carious teeth, crowded or mal-occluded teeth should receive proper attention. No operation *per se* will cure stammering, but may put the physical body into better condition to be the servant of the mind. Stammerers have poor voluntary control of their speech mechanism, including breathing, which is usually of a shallow, catchy nature. As speech is built out of breath, the stammerer must be taught breath control. Diaphragmatic breathing should be taught by lecture and example, emphasizing the fact that it should be the aim of the stammerer to practice diaphragmatic breathing at all times, and not only when in the teacher's presence.

As stammering is associated with an interruption of the breath, and as stammering never occurs when the breath is being expired freely, the aim in treatment should be to keep the breath flowing freely, in fact, to insist on an exaggeration at first of the breath in the tone.

The stammerer's attention is directed to the faulty sounds he makes, and he is shown by comparison the correct sounds. Syllabication or dividing words into syllables is one of the best exercises, and much training may be given to it. Mental drill, for poise and relaxation and the use of suggestion and auto-suggestion are useful adjuncts for the treatment of the mental instability.

Short poems dealing with simple subjects may be memorized and used in recitations to emphasize the sound, form and color of the different words. Learning something, and doing something which by repetition the stammerer can do well and usually without stammering, has a marked value in that it assists in the restoration and continuance of the self-confidence which he lacks.

The treatment of a stammerer should not be undertaken lightly, and never without the full co-operation of parents—especially the mother. It is her duty usually to see that the stammerer practices several times a day. To her falls the task, also, of supervising the minute details of the patientts life; regulating the diet, sleep, exercise and play according to necessities. In very nervous children an hour or two spent in complete rest in bed, in the afternoon, will go far to conserving nervous energy.

As the treatment of stammering is practically the supervision of the entire life of a child for a period of from six months to several years, it is the province of a physician of wide general learning, as well as special training, to undertake these cases.

The author mentions that the treatment of lisping or baby-talk consists in a replacement of the faulty sounds by correct ones.

In beginning the treatment a record chart of each sound that is made incorrectly is kept for reference. The correct sound is then made for the lisper who repeats it until the memory of it is firmly fixed in the mind. Actual demonstrations to the lisper, showing correct mouth, tongue, lips and teeth positions are made daily.

MYXEDEMA AND HYPOTHYROIDISM.—Dock, *Journ. Missouri State Med. Assn.*, May, 1919, asserts that myxedema in its classical form is a rare disease. Like many other uncommon diseases, it is very often unrecognized in practice, especially the less

marked cases, which are not so rare. Lack of careful examination of the patient more often causes the error than lack of knowledge. The obscure cases, the so-called "formes frustes," are obscure partly because they may have elements due to disturbances of functions of organs other than the thyroid. These require clinical study for their elucidation, since experimentation can never imitate all the processes of nature; but if the clinical examples are not recognized reasonably early, they are likly to be confusd and their lessons lost.

Some difficulty has been caused by the name myxedema. Many think of advanced or striking cases and pass by many interesting and even severe cases because the subcutaneous changes are not present in the expected degree. Diseases of the thyroid gland have a wide range of mildness or severity, and may in any case be combined with disease of some other organ of internal secretion. When one ductless gland is functioning imperfectly other glands are likely to be affected in function. This frequently occurs as an over-function of the associated gland and the over-function may lead to or be followed by lowered function. Hence a great variety of symptom pictures occur which hardly deserve the name of "pluriglandular disease" unless there are definite features of other diseases, such as adrenal, pituitary, etc. All the external bodily traits are due to the action and the interaction of the ductless glands—such things as stature, bone structure, subcutaneous fat, hair, etc. These change at various stages of life, in various degrees, in different people. Minute and gradual changes may be simulated by ductless gland disease, or such symptoms as belong to the menopause or to old age occur untimely as the result of endocrine disease. Those who look on senility as hypothyroid disease are often right, and if they act on their belief will from time to time bring about striking therapeutic results.

The statistical features of hypothyroid disease, especially its incidence in practice, are not of much value because of the many cases overlooked or not recorded. It may occur at any age, although most cases are discovered in infantile or late middle life. It affects people of all occupations and of all degrees of financial want or independence.

The essentials to recognition are: a general knowledge of the symptoms, such as can be gleaned from any textbook; the application of this knowledge to all patients examined; the realization that hypothyroidism has been mistaken for various other diseases, and the differential diagnosis in all such cases. Substitution therapy is a valuable aid for hypothyroid conditions which is of the greatest value and when we are in doubt as to whether an edema, or loss of memory, or skin affection, or menorrhagia, is of thyroid origin, we have only to make a careful test and the answer will soon be given. That there is danger in the test is not a serious contraindication. The greatest danger is in the few cases of hidden hyperthyroid disease that may be lighted up by thyroid administration. These should always be suspected. If they are intensified, it must be remembered that any accident, such as overwork, infection like tonsillitis, or emotional shock, might produce the same symptoms, and if the therapeutic test is carried out with the care it deserves no great harm can follow. The question might arise whether there may not be altered secretions in some cases, that is, dysthyroidism rather than hypothyroidism. At present we have no accurate knowledge of such processes. Variations or even combinations of hyperfunction and hypofunction, with altered function of other organs may possibly account for all the varieties encountered.

Myxedema is frequently mistaken for nephritis. The disease may be combined, and in many cases of myxedema there is a low grade of albuminuria. But even if there is albuminuria with casts and lowered function, the hypothyroid element can usually be recognized with little trouble. The subcutaneous swelling, usually the basis for the wrong diagnosis, is rarely like either the edema of a parenchymatous nephritis, or still less like that in interstitial nephritis with its characteristic cardiac features. The swollen lips and eyelids, the tougher, even wooden hardness of the swelling instead of the soft

spitting of nephritis, the dry rough skin with almost never failing pigment changes, should excite suspicion of something more than nephritis. The history of onset, if investigated will show an absence of causes of nephritis and a different, often most picturesque, course. The blood pressure is usually low but may be high.

Between hypothyroidism and senility, as between the former and menopause, the study of the complete course and symptomatology should lead to at least a therapeutically useful diagnosis.

Changes in hair growth are among the most important symptoms. Some of these are similar to senile changes but they often occur before the usual senile age; even if the early baldness or grayness is a family trait it may result from thyroid deficiency and should lead to further investigation.

Alopecia, especially at the edges of the hairy scalp, and alopecia of body or extremity, where hair formerly was present and before general senile changes is noteworthy. Thinning of the outer part of the eyebrows is a feature. Excessive hair is rarer but probably occurs as a hypothyroid symptom.

Myxedema pads are often not present or not marked and so may lead to wrong diagnosis. There may be a distinct thickness of the subcutaneous tissue, local or general, and its rapid melting away under treatment sometimes gives the finish to a doubtful diagnosis. Thick fingers, far from the sausage shape of textbooks but recognizable as pathologic, and a known change in the glove and shoe size, are very important signs. The various kinds of roughness, pigmentation, warts, moles, chloasma and other changes in the skin need only be mentioned. The value in diagnosis depends on their suspected relation to the other symptoms and their rapid change under treatment.

The sensation of coldness or the sensibility to cold, with actual low internal temperature is an important symptom. This may be present in nephritis or cardiac dropsy, but in hypothyroid patients there usually is a history of low temperature, or cold feeling, many years before, sometimes lifelong, and without cardiac defect. Itching, especially of the legs, so common in senility, is sometimes of hypothyroid origin.

Confusion with nephritis should be avoided in many cases by the color of the skin. Sometimes the skin is pale and translucent as in parenchymatous nephritis, rarely cyanotic as in cardionephritic cases. In hypothyroidism there is a tendency to yellowness, sometimes so marked as actually to be mistaken for jaundice. The red malar prominences giving the cheeks an appearance compared to that of a ripe peach is not very common, but very striking when it occurs.

There may be no traces of a thyroid gland and no history of pain or swelling. Or there may be a history of repeated throat infections. In some cases there is a goiter, either colloid or fibrous, and occasionally a clear history of thyroiditis or strumitis, with or after an acute infection of some kind.

In the cases simulating nephritis and in many others the mental changes are often important, so that in all cases with mental alterations the thyroid must be investigated. There may be merely tendency to mental fatigue or loss of memory, insomnia, mental sluggishness, less frequently mental irritability, depression, melancholia, hallucinations of sight, hearing or smelling. Probably many patients have illusions but on account of the fear of suspicion of alcoholism do not mention them. Loss of sensibility may make the use of the hands clumsy.

The combination of paralysis agitants and myxedema has been reported by several observers.

Besides the slowness of speech the voice is often muffled or "leathery." Swellings of the tongue, cheek, soft palate, and nasal mucosa occur.

Menstrual anomalies are not uncommon in women and include all forms of amenorrhea to severe menorrhagia.

Rheumatic symptoms, especially arthritis, are often referred to hypopthyroidism.

Often the symptoms are masked by the preservation of some traits while others

may be distinctly hypothyroid to the practiced examiner. Thus memory and physical and mental energy may be well preserved, though there may be marked skin changes, with low bodily temperature. The author begins with a small dose of thyroid, about a grain t. i. d., increasing it rapidly until physiologic effects appear, and then reducing until a desired condition has been reached.

A Case of Traumatic Hysteria with Amaurosis.—George R. Hare, *New York State Journ. of Med.*, April, 1919, reports the case of a professional musician who was forced by necessity to resort to manual labor. On January 24th, 1917, in the course of his work, his left eye was struck by a fragment of broken china, followed by immediate blindness of this eye and closure of its lids. During the following two months he was treated privately with Violet Ray. At the end of that period the doctor announced the presence of a corneal ulcer. Following this he was a patient in two hospitals, before he entered the Manhattan Eye, Ear and Throat Hospital. For several months he received compensation, small in amount. This was discontinued because of authoritative opinion that the condition present was not due to injury.

When examined, November 12th, 1917, the right eye appeared normal to inspection. The left upper lid drooped to such extent that the palpebral fissure was closed. The skin of the lid was smooth and unwrinkled, as was also that of the forehead. The eyebrow was on a lower level than the right. With upward rotation of the eyeballs there was co-ordinate elevation of the upper lid, the lower remaining in apposition. With this movement, no over-action of the frontalis was observed Forcible elevation of the drooping lid disclosed appreciable resistance and the presence of a fine tremor. Upon release there was spontaneous closure. Separation of the lids induced profuse lacrymation. The ocular conjunctiva was moderately injected. The cornea was clear and careful search failed to reveal any source of local irritation, but it was found that the cornea and bulbar conjunctiva were insensitive, the lid reaction being almost completely abolished while the lacrymal reflex was active.

The direct and consensual light reactions, as well as the convergence reaction of the right pupil, were normal. The left pupil was dilated and fixed as a result of atropine. Ophthalmoscopic examination showed that the media and fundus of each eye were normal and that no appreciable ametropia was present. Subjectively, the right eye had visual acuity of 20/200, the left no perception of light.

For the following two weeks, the patient was under close observation, but no evidence of simulation was discovered. During the interval, it was found that the right cornea and conjunctiva were insensitive, also with retention of the lacrymal reflex. After the period specified, conditions were unaltered except that of the right pupil. This was moderately dilated and its reactions to light and convergence, while present, were impaired. Subjective examination gave the following results: by means of the Cuignet or pencil test it was demonstrated not only that fine print could be read by the apparently blind eye but also that the accommodation was active. With a 1 D. concave lens over the right eye vision was 20/20—while with a 16 D. convex lens over this eye 20/50 was joyfully read. The visual field of the right eye was tested by daylight, on a perimeter, with 10 m. m. squares, changeable by rotation, moved from the periphery toward the center of the arc. The findings obtained from repeated readings, with rest intervals, were moderate concentric contraction of the field for white with similar contraction of the color fields except temporarily, where there was interlacing. On the horizontal meridian the blue field was contracted 30 degrees, the red 15 degrees, while the green overlapped both.

As a result of these findings and in view of the sudden onset co-incident with injury, a diagnosis was made of traumatic hysteria.

The lid findings represented a spastic or pseudo-paralytic ptosis.

The epiphora evidently was functional and the anæsthesia undoubtedly so, as shown by the presence of the lacrymal reflex. This anomaly as a means of differentiation between hysteria and an organic lesion has been emphasized.

Concerning the pupil, the partial dilatation, the curtailed reflexes and the presence of a normal accommodation indicated that the mydriasis was spastic. In this connection it is of interest to note that the very few cases of paralytic mydriasis, without cycloplegia, reported have not been accepted by all authorities.

The contraction of the visual fields with dyschromatopsia and the other subjective findings mentioned demonstrated the existence of anæsthesia of the visual sense, partial in the right and complete in the left eye.

The character of the dyschromatopsia in the case is its most unusual and most interesting feature. That there exists a dominant predilection for red in hysteric fields is generally accepted. Nevertheless, exceptions have been found and reported.

Harlan has classified hysterics with amaurosis as follows: those who deliberately simulate the blindness, those who see unconsciously but are incapable of conscious vision and those who are transiently absolutely blind. As this classification is frequently quoted it has evidently been generally accepted. There is no question that in the case under consideration, good vision by the left eye was present and that visual impressions reached consciousness and formed concepts, when the patient was unaware or unconscious that this eye was in use. If, therefore, this may be regarded as unconscious vision, the case belongs to the second class.

In its general aspect, the case is of interest not only because of the aggregate of hysterical manifestations and their long continuance, but, particularly, because of the bi-lateral nature of the affection which again reminds us of the resemblance of hysterical visual phenomena to the few recorded cases of crossed amblyopia from organic lesion.

THE RESPONSIBILITY OF MEDICAL OFFICERS IN THE DEVELOPMENT OF HYSTERICAL SYMPTOMS IN SOLDIERS.—Syms, *Seale Hayne Neurological Studies*, September, 1918, calls attention to the perpetuation of the sensation of pain by autosuggestion through the attendant making a diagnosis of an organic disease, as myositis, neuritis, etc., based solely upon the subjective symptom of pain.

The patient who has pain without physical signs should be labelled "pain" (muscular, etc.)—"no physical signs," in place of "Muscular rheumatism," etc.

The author has found a large number of cases which did not conform to any definite disease and without physical signs, in which a diagnosis should not have been made. Cases with such diagnoses as fractured skull, cerebellar abscess, tabes, disseminated sclerosis, myelitis, appendicitis, gastritis, laryngitis, rheumatism, valvular disease of heart, aneurysm, etc., have come under his observation in the absence of any physical sign of disease.

In the case of a man thrown from his horse and who complained of giddiness, a skiagram was taken and a fracture of the frontal bone was said to be present together with a deep shadow that suggested an abscess to the radiographer. He was seen next by an ophthalmic specialist, who said the disks were "blurred but not pathological." It took some days to convince him that he had no abscess in his brain or fractured skull.

Cases of hysterical postures and gaits diagnosed as myalgia are unfortunately of frequent occurrence: a man with pain in his back, after a stay of weeks in a hospital, where he has no treatment, and a month at a spa where he has too much treatment, may at last be recognized as a functional case, with the result that he is sent to a neurological centre, where he is cured in one sitting.

The necessity of making a diagnosis is impressed upon the medical student when

he enters a hospital, and is still more deeply impressed upon him in later life by the general public, who will so often willingly exchange a fee for a name they think they understand. It is so easy to label a patient with a disease and so difficult to persuade him to discard it. If it is realized that in many cases the indiscriminate diagnosis of a disease acts as the starting-point of hysterical symptoms, medical officers will rely less on lightning diagnosis and more on physical signs, which are the only scaffolding on which an accurate diagnosis must be built.

THE TREATMENT OF DELIRIUM TREMENS BY SPINAL PUNCTURE, STIMULATION, AND THE USE OF ALKALI AGENTS.—Hoppe, *Journ. of Nervous and Mental Diseases*, outlines a method of treatment based upon the pathology of the disease. Delirium tremens is an acute exhaustion psychosis developed upon a basis of chronic alcoholism, with characteristic pathological changes in the brain, heart and blood-vessels, and also an acute condition of the meninges caused by a poison which has found its way into the cerebral circulation. Degenerative changes and passive congestion of the intestinal tract lead to the formation of an intermediate toxin, which is probably the cause of the delirium. As long as this toxin can be eliminated by the kidneys, with the help of the circulatory apparatus, conditions are fairly normal. As soon as there is a failure of elimination, however, cerebral oedema, an increase of cerebro-spinal fluid, arterial ganglionic celll asphyxia, acidosis, and then delirium tremens occur. The underlying causal factors, the toxin, weakened circulation, deficient elimination, increased pressure of the cerebro-spinal fluid are therefore rationally treated by elimination, stimulation of the circulatory apparatus, and the removal of the increased pressure on the brain and cerebral circulation.

Briefly, the routine method adopted is as follows: (1) Catharsis—calomel and Epsom salts; (2) digitalis and nux vomica; (3) alkalies; (4) hot packs; (5) spinal puncture—from 30-60 c.c. being withdrawn.

As a result of considerable experience of treatment upon these lines the writer concludes that the disease is thereby rendered shorter and milder, the patients are easier to nurse, complications are avoided and the death-rate is definitely reduced.—*Jour. of Mental Science.*

ENCEPHALITIS LETHARGICA.—Vaughn, *Journal of Laboratory and Clinical Medicine*, April, 1919, reviews the recent literature of this disease relative to its etiology, pathology and diagnosis, especially as to its differentiation from anterior poliomyelitis, meningitis, and botolismus, all of which it may resemble clinically; from which the author concludes that only tentative statements can be made concerning the disease. It involves the brain principally, though in many cases there is more or less involvement of the meninges, but this is not prominent. The cord is never involved; the apparent stupor is due to partial paralysis of the motor nerves employed in elevating the upper lids. Coma is not a symptom of the disease.

The etiology is unsettled, though the fact that it has always followed a pandemic of influenza, strongly suggests that it is a sequela of that disease.

That one has had not had influenza does not mean that influenza is not an essential forerunner of the disease. Most people who have lived through epidemics of influenza, even when there has been no recognizable appearance of the disease in them, have acquired at least a temporary immunity to influenza. The natural conclusion to draw from this is that in a large number—indeed in the majority of people in the midst of an epidemic of influenza—the virus affects the people sufficiently to give a temporary immunity, and it may be that the virus of influenza without causing recognizable acute symptoms may after weeks or months produce the changes in the brain observed in encephalitis lethargica.

THE MANAGEMENT OF WAR HYSTERIA.—Tom A. Williams read a paper before the American Medical Association, Atlantic City, June 11, 1919, in which he stated that nearly ten per cent of the soldiers incapacitated during an attack are found to have hysteria. A large proportion of them can be restored immediately, if skillfully managed, and returned to duty without loss of efficiency. The physician must understand thoroughly the psychological mechanism of the patient and must exercise a dynamic volition which will compel him to use the effort demanded.

In the more complex cases where hysteria has become fixed, individual analysis is necessary and a longer course of suggestion and persuasion. The inert man must be differently treated to the determined man. The former is easier to cure, but more difficult to keep well.

The best method of treatment is to change the patient's mental attitude by re-educative procedure. In order to accomplish this it is essential that the physician be able to enter into the thoughts and feelings of the patient. It is then easy to modify his viewpoint, and lead him out of the woods into the light.

CALCIUM IN EXCITED STATES.—T. C. Graves, *Journal of Mental Science*, April, 1919, acting upon the theory that calcium is necessary for the normal effect of adrenalin on sympathetic nerve-endings, and the assumption that in acute excited states there can be no lack of adrenalin in the body but an absence of its "fixation," the author exhibited calcium lactate in ten-grain doses to many cases of more or less acute excitement with satisfactory results. The cases include, of the manias: epileptic, simple, delirious, and recurrent; agitated melancholia and recent acute hallucinations. The effect of the drug is to calm the mental state and improve the physical condition. A rapid, weak pulse becomes slower and stronger, any diarrhœa present ceases or is improved, a dry, harsh skin becomes moist and supple, the appetite also is improved. The younger the case the better the result, similarly the more recent the case, especially if of influenzal origin. Some of the cases responded although over forty years of age, and several old-standing cases have shown a temporary improvement.

A NEW METHOD OF REINFORCING THE KNEE-JERK.—Hurst, *Seale Hayne Neurological Studies*, Sept., 1918, describes a new method of reinforcement of the knee jerk by means of which he has been able to obtain a response after failure of Jendrassik's method, even when reinforced by looking at the ceiling and counting.

In a case of tabes, for example, in which both ankle-jerks and both knee-jerks appeared to be absent when examined by the well-known methods of reinforcement, a jerk of average normal degree on one side and only slightly diminished on the other was obtained by this method. In all cases, in which Jendrassik's method succeeded after failure to elicit the jerk without reinforcement, the new method was at least equally successful, and in several cases a much brisker jerk was obtained.

The patient lies or sits with his leg in a horizontal position, the knee being slightly flexed. The leg is unsupported except for the foot, which presses against the bar at the bottom of the bed, or against a shelf or other projecting ledge, if the patient is sitting. As soon as the leg is properly balanced the patellar tendon is struck. It is sometimes necessary to readjust the angle of the knee or the exact part of the foot, which is exerting pressure, in order to obtain the maximal degree of reinforcement.

THREE UNUSUAL NASAL (SPHENO-PALATINE) GANGLION CASES.—Greenfield Studer, in a paper before the Tenth Annual Congress of the American Laryngological Association, said the usual neuralgic picture is pain in and about the eyes

and the upper jaw, the teeth, extending backward about the temple under the zygoma into the ear, making earache; and then backward into the mastoid; and severest usually at a point two inches back of the mastoid, to extend into the occiput, the neck, the shoulder; into the shoulder blade, and sometimes the axilla and breast, and frequently down into the arm, forearm, hand and even to the finger tips.

Added to this symptom complex, frequently is found a sneezing and watery secretion more marked probably in the morning, frequently extending through the day; a red external nose, with tearing eyes, photophobia, and a sense of discomfort in the eyes difficult for the patient to describe.

Occasionally, however, are added unusual features to this clinical complex, notably vertigo. These cases record phenomena that at present are unique and cannot be explained. They may be recorded as facts.

The first case was relieved of the dizziness and the headache after cocainization of the ganglion, the headaches returning in six hours. The patient passed from further observation.

In the second case headache ceased, but as an effect of cocainization the right eyelid drooped very perceptibly to obscure probably half of the blepharospasm, and the pupil contracted to one-half of its fellow of the opposite side.

The third case was one of a right sided blepharospasm of great severity, and was a post-ethmoid sphenoid suppuration with polyps on the right side.

Cocainization of the right nasal ganglion relieved the blepharospasm for a period of three hours, and injection of the same ganglion was followed by relief of the spasm for three to six hours.

Operating on the ethmoids and sphenoids did not relieve the spasm.

The left side was then operated upon without relieving the spasm, although the right eyelid opened after injection of the left ganglion.

"Fan Sign" in Hysterical Paraplegia.—Venables, *Seale Hayne Neurological Studies*, Sept., 1918, records a case of hysterical paraplegia in which there was present Babinski's "fan sign," a phenomenon which sometimes forms part of the plantar reflex and which is usually considered indicative of an organic lesion of the pyramidal system.

Pte. N., admitted to hospital with a history of paraplegia and aphonia of five months' duration, this being his second attack of aphonia. The paraplegia was first observed after he had been resting in bed for six weeks for neurasthenia. The condition appeared to be entirely hysterical, as with the exception of a well-marked "fan sign" there were no signs of organic disease. He was treated the day after admission with persuasion and re-education. The aphonia disappeared in a few minutes, and he was able to walk and run normally in half an hour. Simultaneously with the disappearance of the hysterical symptoms the "fan sign" completely disappeared. All subsequent examinations of the plantar reflex have elicited a perfectly normal response.

It is clear, therefore, that the "fan sign" cannot be regarded as a reliable sign in diagnosing hysterical from organic paralysis.

EXPERIMENTAL NEUROLOGY.

The Diagnostic Value of Lowered Bone Conduction in Syphilis.—Goeckermann, Barlow and Stokes, *American Journ. of Syphilis*, April, 1919, report the result of their studies upon 100 cases selected as follows: Hearing tests were done routinely by the otologist (Barlow) in a number of cases in which he was unaware of

the diagnosis, and the 100 cases were then selected in which the data were sufficiently complete to establish or exclude the presence of syphilis.

Three tuning forks are necessary; one the vibration rate of which is 128 per second, one 256, and the third 2048. The forks are set in vibration either by stroking rather vigorously, or by striking the fork on the knee or on the palm of the hand. The examiner holds the fork close to the ear of the patient until the patient no longer hears the sound. The examiner, taking his own hearing for normal, then carries the fork to his own ear to ascertain the patient's discrepancy, if any, and expresses in seconds, the difference between the time the patient hears the fork and his own hearing of it.

Part 1.—After examining the ears of the patient for other pathologic conditions. the 128 fork is set in vibration and is placed on the vortex of the skull of the patient, equidistant from the ears, and note is made of the equality of the tone as heard in both ears. Should there be a marked difference between the two ears, this must naturally be taken into account in any further examination and in the final interpretation. This test is known as the Weber test.

Part 2.—The fork used in the first test is set in rapid vibration, but this time it is simply held near the ear of the patient until he no longer hears it. The number of seconds that the patient hears the fork is noted. The examiner thereupon listens to the fork himself, noting the number of seconds that he hears it. Both ears are tested in this way giving the value of the low limit. The 2048 fork is then used in like manner giving the high limit of the patient's hearing.

Part 3.—This is the most important phase of the test; the comparison of the conduction of sound through bone in the patient, as compared with that in the examiner. The 256 fork is set in vibration by striking smartly against the palm of the hand, and the stem of the fork is held firmly to the mastoid process about the level of the superior margin of the external canal, and just behind the ear. The patient is asked to note carefully when he no longer detects the tone of the fork, at which time the examiner conveys the fork to a corresponding position on his own mastoid and carefully observes whether he hears the fork longer than the patient, and if so, how much longer. The number of seconds the operator hears the fork after the patient ceases to hear it, is expressed in terms of the patient's deficiency as minus seven seconds or minus eight seconds, or whatever the numerical value may be found to be. If the patient hears the fork through bone longer than the examiner he has an increased bone conduction, which is designated as plus whatever the number of seconds may be. If the patient does not hear the fork as long as the examiner the paitent's bone conduction is said to be decreased or lowered. This test is performed on both ears and constitutes the Schwabach test.

Part 4.—The Rinné test is next done which consists of comparing the conduction of sound by bone in the patient with his air conduction. This is obtained by holding the fork opposite the patient's external meatus after he has ceased to hear the sound through the bone. This test is essential to classify the type of deafness if any be present. Normal hearing shows air conduction of longer duration than bone conduction and is called a positive Rinné test. The acuity of hearing may be tested for whispered voice, but this is not essential as the bone conduction test is a tuning fork test.

If the examination of the ear does not show a pre-existent lesion, such as chronic suppurative otitis; if the high and low limits of the patient are normal, the perception of sound is about equal in both ears, and the Rinné is positive, but the bone conduction shows a decrease of five seconds or more, or is decreased out of proportion to the rest of the fork tests, the patient is said to have a bone conduction sufficiently reduced in the presence of normal hearing to justify the assumption that he has syphilis. A decrease of four seconds is considered to be within normal limits because it has been found that there is a physiologic discrepancy between the actual interpretation and perception of the sound. By repeated tests on the same person, it was found that the person becomes educated to interpret more accurately the vibration of the fork, and that a

person at first showing a reduction of four seconds, by repeated trials and after overcoming his first nervousness will very often show practically no reduction.

In the carrying out of these tests, the patients were always examined in the same room, with the same set of tuning forks, about the same time of day, and by the same otologist. The perceptive power of the patient was also considered.

Syphilis was established or excluded clinically by investigating the history in detail; searching for the residual signs of syphilis, and the use of complete laboratory tests including a complete examination of the cerebrospinal fluid in all cases presenting symptoms suggestive of central nervous system involvement. Patients with suspicious but not conclusive evidence of lues were given the benefit of a therapeutic test. This consisted in the administration of at least three doses of arsphenamine at weekly intervals, and usually about five injections of one-sixth of a grain of mercury succinimide per week, for from fifteen to twenty doses. An equivalent of the latter in mercurial inunctions was frequently employed.

The following comparisons were made: (1) negative bone conduction results with negative syphilitic findings, (2) negative bone conduction results with positive syphilitic findings, (3) positive bone conduction results with negative syphilitic findings, and (4) positive bone conduction results with positive syphilitic findings.

These studies lead to the following conclusions:

1. The so-called lowered bone conduction test (reduction in conduction of sound by bone as compared with otherwise normal hearing) is positive in 78 per cent. of known syphilitics in our series.

2. From the otologic standpoint the test is only of value if a complete hearing test is done.

3. The efficiency of the test varied greatly in different types of syphilis, being at its best in late cutaneous syphilis (100 per cent.), latent syphilis (80 per cent.), syphilis of the central nervous system (80 per cent.) It had almost no value in osseous lues, and the results in early syphilis were inconclusive (too few cases). A negative Wassermann test combined with a negative bone conduction test is strong evidence of the absence of syphilis.

4. The test agrees with the positive or negative diagnosis of syphilis in 67 per cent., and disagrees in 33 per cent.

5. The test was also positive in 48.7 per cent. of patients in whom syphilis could apparently be excluded.

6. It has, on the whole, therefore, only a restricted value as a diagnostic aid, owing to its high factor of error.

THE "PROVOCATIVE" WASSERMANN TEST.—Pollitzer and Spiegel, *Amer. Journ. of Syphilis*, April, 1919, thus briefly describes the theory of the provocative arsphenamine injection: in the normal course of a syphilis or as the result of treatment, the number of spirochetes or their function may be so reduced that certain products of their activity, the "Wassermann body"—which following Neisser we shall call "reagen"—may be entirely absent in the blood of the infected individual or be present in a quantity too minute for detection by the Wassermann test. If, in this Wassermann-negative stage of the infection, a small—therapeutically inadequate—amount of arsphenamine is injected into the patient, the spirochetes present in the system will be provoked temporarily to greater functional activity, with the result that an amount of reagen will be formed great enough to yield a positive reaction with the Wassermann test.

The "provocative" test was made in about 150 cases of syphilis that had become Wassermann negative after treatment. For the most part an intravenous injection of 0.2 gram arsphenamine was given and blood drawn for the Wassermann test on the fol-

lowing day and again at two days' interval for eight days and twice during the succeeding week; indicating the day of the injection as day 0, the Wassermann specimens as taken on days 1, 3, 5, 7, 10 and 15. This rule was not followed invariably but prevailed in certainly three-quarters of the cases. The laboratory work was under the supervision of a former pupil of Citron (Wassermann's assistant). The work of this laboratory may be regarded as at least as reliable as that of the average serologic laboratory. The antigen used was generally alcoholic extract of guinea pig's heart. The Wassermann tests were made in duplicate in about one-third of the cases.

This investigation leads to the following conclusions:

1. The Wassermann test is so subject to errors of various kinds that dependence on a single positive reaction in a series of tests is not justified.

2. In an uncured case a change from a negative to a positive reaction may happen to coincide with the "provocative" injection and a positive found after the injection may be the result of the normal increase in reagen without relation to the injection.

3. In a series of about 150 cases of treated syphilis of all kinds there was not a single clear case of a provoked reaction; while the assumption of a cure in all these cases is obviously untenable.

4. In a series of cases temporarily negative, selected as probably not cured, the "provocative" test failed to indicate the presence of syphilis though the subsequent course of the cases proved that the syphilis was not cured.

5. The "provocative" arsphenamine injection is a useless and often misleading procedure.

THE COLLOIDAL GOLD REACTION.—Weston, *Amer. Journ. of Syphilis*, April, 1919, describes the methods for making colloidal gold and gives directions for doing the test. The characteristics of a good gold solution are stated and the nature of the substance causing the reaction is discussed. The combination of positive Wassermann reaction associated with a negative gold reaction is explained by the Wassermann reacting substance and the gold precipitating substance being two different and separable constituents of the spinal fluid. In paresis there is a parallelism between the Wassermann reaction and the gold curve. Fluid from clinically negative cases sometimes shows a typical paretic curve. Such findings call for minute clinical observation and repeated examination of the spinal fluid over a long period of time. There is not yet sufficient evidence to warrant the statement that such cases are syphilitic. Close observation, repeated examination of the spinal fluid and blood and microscopic examination of the brain and cord after autopsy in a great number of such cases is necessary before any justifiable conclusion can be reached. Chemically, the gold reaction is a test for the amount of globulin in spinal fluid and indirectly of the amount of albumin. Clinically, the test is of great value in that it furnishes corroborative evidence of neurosyphilis.

NEURO-ETIOLOGY.

THE ROLE OF TUBERCULOSIS IN DEMENTIA PRECOX.—Gosline, *Journ. of Laboratory and Clinical Medicine*, April, 1919, presents a critical analysis of seventeen cases of dementia precox with a mental course and a physical picture so nearly parallel that either one may be taken to be the cause of the other, which apparently indicates two types of this psychosis: one, a true dementia precox is a constitutional psychosis, following puberty, independently of toxic or infectious causes: the other, a toxic-infectious psychosis, often of tuberculous origin, which takes the form of dementia precox but does not always lead to dementia, and is curable in the cases in which the meningeal and encephalic lesions are not pronounced.

NEURO-PATHOLOGY.

THE INFECTIVE FACTORS IN SOME TYPES OF NEURASTHENIA.—Ford Robertson, *Journ. of Mental Science*, January, 1919, observes that the distinctive signs and symptoms of neurasthenia are capable of fairly precise definition. The chief symptoms are constant feeling of fatigue, not relieved by rest; the occurrence of various forms of hyperasthesia and paraesthesia, and localized pain. Two important physical signs constantly occur—exaggeration of the patellar reflex and tremor of the eyelids when the eyes are half closed. Added to these there are, in greater or less degree, characteristic mental features which constitute, the picture of psychasthenia, namely, incoercible ideas, obsessions, and monophobias.

Predisposing to the occurrence of neurasthenia there is a particular type of constitution—the neurasthenic diathesis. Under the same adverse conditions some persons will develop neurasthenia, while others will not. Slight degrees of the malady are extremely common. It is chiefly the people who have a neurasthenic constitution who are the most brilliant, original, energetic, and influential.

The severe and distinctly pathological manifestations of neurasthenia are here considered. Neurasthenia may be a prelude of serious organic disease, such as general paralysis, dementia precox, other forms of insanity, pernicious anaemia, rheumatoid arthritis, and tuberculosis, the onset of which may obscure, but rarely obliterates, the characteristic features of the less serious malady.

The causation of neurasthenia has hitherto been uncertain. The only assigned cause having any definiteness is traumatism, and this, at most, accounts for only a small proportion of the cases. This factor is of special interest at the present time. The trauma may be physical, or it may operate by vivid or painful mental impressions as shock. The importance of this traumatic factor is being much exaggerated, many of the morbid conditions universally attributed to it can be proved to be due to chronic bacterial infections, which have been aggravated by the physical and mental stress, and other conditions inimical to health, to which the soldier on active service is inevitably subjected.

The number of cases of neurasthenia investigated bacteriologically is sixty-six. The areas of the body investigated have been chiefly the nasal passages, lower respiratory tract, nasopharynx, mouth, fauces, and the intestinal and genito-urinary tracts. The nature and importance of acute and chronic infections of the nasal passages and lower respiratory tract are fairly well understood. It does not seem to be realized that the nasopharynx is the part of the body more liable than any other to bacterial attack, and that various important chronic maladies are commonly dependent upon infections of this region. Infections of the genito-urinary tract are somewhat better understood. The region that has suffered the most serious neglect in respect of the possible relation of chronic infections to common diseases is, however, the alimentary tract.

Most persons afflicted with neurasthenia suffer from intestinal stasis and its consequent toxæmia. The toxins absorbed from the colon in these cases are varied in nature and origin, but they are chiefly formed by the action of saprophytic bacteria upon the food residues. Absorbed in excess of the amount that can be destroyed, they produce lassitude, mental depression, slight degrees of mental confusion, more or less severe headache, and sleeplessness or drowsiness. All cases of neurasthenia accompanied by intestinal stasis are aggravated by absorption of these toxins. It is an error to regard any case of neurasthenia as dependent upon intestinal stasis alone. There are always pathogenic factors of much greater moment.

The methods of focal reaction and therapeutic immunization furnish trustworthy evidence as to whether a particular organism isolated from a case is acting as a pathogenic agent or not. Applied in a long series of cases, they permit of important practical generalizations regarding the bacterial causation of many chronic maladies. A

focal reaction is specific. It is an active congestion at the seat of infection induced by the hypodermic injection of a minute dose of an emulsion of the corresponding bacterial toxin. It is almost always revealed by characteristic disturbances which generally simulate certain symptoms of the malady. Sometimes the active congestion can be seen, as, for example, in the course of therapeutic immunization for infections of the conjunctiva. In many other instances it is manifested by signs scarcely less distinct. Frequently we have to rely only upon symptoms experienced by the patient. If, after we have induced a series of such reactions, all symptoms disappear, there is added the evidence of therapeutic immunization in support of the conclusion that the bacterium used in the preparation of the vaccine was the cause of the malady.

In all of the sixty-six cases investigated, chronic infections were discovered and their relationship to the malady, as either the chief, or a very important contributory cause, was established by the methods indicated. In most instances the infections were complex. In seven of the cases the neurasthenia seemed to depend essentially upon a chronic infection by the bacillus of influenza. Under therapeutic immunization all of the cases made complete recoveries, with the single exception of one in which treatment is not yet finished, but in which there is every prospect of a good result.

There were ten cases in the series in which a pneumococcus was the only, or the leading, chronic infective agent. In eight of these cases the intestine was the seat of invasion; in the remaining two it was the nasopharynx.

Ten cases occurred in which invasion by the streptococcus pyogenes was at least an important factor in the production of the patient's malady. In five of the cases the seat of the infection was the nasopharynx, in two the gums, in two the intestine, and in one the organism was found only in the urine.

The *Streptococcus* facalis was found under such conditions as to warrant the conclusion that it was acting as an infecting agent in eleven of the cases. The most common seats of infection were the nasopharynx and intestinal tract; examples of infection of the urinary tract also occurred. The streptococcus is a very common infecting agent, and it is the exception for its invasion to be associated with nervous symptoms.

Investigation of the intestinal flora has shown that intestinal infections by anaerobic diphtheroid bacilli occur with considerable frequency, and that they are almost always associated with severe nervous disturbances. The types of cases in which there occur such infections by anærobic diphtheroid bacilli include neurasthenia, mucous colitis, exophthalmic goitre, disseminated sclerosis, and various forms of acute and chronic insanity.

Of the sixty-six cases of neurasthenia, forty-nine had diphtheroiduria. Six were ascertained to have ærobic diphtheroid bacillus infections of the intestine and twenty-five to have similar anaerobic infections. Some of the earlier cases were not investigated by anærobic methods, and this figure is therefore probably below the actual mark. Aerobic diphtheroid bacillus infections of the nasal passages, nasopharynx and gums are common, and may be either of little or great pathological importance.

Five cases of neurasthenia complicated by exophthalmic goitre showed severe intestinal infections by anærobic or ærobic (one) diphtheroid bacilli. In four of the cases there was also intestinal infection by *Streptococcus faecalis haemolyticus*, and in one by a pneumococcus.

Included in the sixty-six cases of neurasthenia investigated bacteriologically, nine were of patients in the Army or Navy who had seen active service. None of them had suffered from shell-shock, but all of them had endured severe physical and mental strain, and some of them also exposure to cold and wet, and privation. They were cases typical of those that fill the military hospital for neurasthenics. All of them on investigation proved to be suffering from severe chronic infections incompatible with health, and every one of them has either recovered, or is now improving under therapeutic

immunization directed against the infections from which he was ascertained to be suffering. Each case has had its point of interest.

The author does not deny the importance of traumatism and strain, physical and mental, as factors in the causation of neurasthenia, but after a period of rest the symptoms due to such causes should either subside, or leave residues that are distinguishable from the phenomena of true neurasthenia. If neurasthenic symptoms continue they must have a toxic basis, and the cases should be investigated and treated accordingly.

NEURO-SYMPTOMATOLOGY.

KERNIG'S SIGN IN TRUE TYPHOID FEVER.—Andibert and Nalin, *Medical Record*, discuss the occurrence of this sign in septic conditions due to Eberth's bacilli.

Kernig considered this sign diagnostic of meningitis, though it cannot always be elicited and it has been reported as occurring in other conditions.

The authors have studied the evolution of the sign, the diagnostic and prognostic significance in miscellaneous typhoid cases and the relation between the sign and the lumbar punctures, etc., and conclude that Kernig's sign is very frequent in affections due to Eberth's bacillus—in over half of all their cases. It appears at the outset of the disease and does not disappear as a rule until convalescence. It is rarely absent in the severe form (save in adynamia after the system no longer defends itself against the disease), but is often encountered in the mildest forms in which there is no participation of the nervous system. Its explanation is to be sought in the action of the disease toxins on the cerebrospinal motor system, but it occurs in association with perfectly normal cerebrospinal fluid. In general it is indicative of a sepsis or blood state and not of a special state of the cerebrospinal fluid.

PSYCHIATRY.

THE TREATMENT OF GENERAL PARESIS.—Clarence A. Neymann and Nathaniel H. Brush, *Archives of Internal Medicine*, 1918, vol. xxii, p. 245, report twenty-four cases of general paresis, treated according to the author's method, alternately once a week with arsphenamine serum and mercurialized serum are described. Six patients were so markedly improved that five of them were able to resume their occupations. All of them gave practically negative serologic findings. The average duration of the present status is fifteen months. They consider these are arrested cases. Six others were somewhat improved, four resuming their occupations, while two are continuing their treatment. All of these were somewhat improved serologically. Six showed no clinical or serologic improvement, except in one case. This is undoubtedly a clinical remission; the serologic status remained unchanged. The last six were harmed by the treatment. One developed a paraplegia; two became incontinent; one died of acute arsenical poisoning and one developed an arsenic neuritis; finally, one died in convulsions, possibly as the result of the treatment. Whenever the serologic findings tend to become negative, they usually change in the following order and manner: The cell count is first reduced to normal. The Wassermann reaction then becomes negative. The paretic colloidal gold curve changes to an atypical or negative one. The globulin test becomes less marked, but traces of globulin usually remain. Twenty-three per cent. of all the paretic patients examined in this clinic show negative blood Wassermann reactions.—*American Journal of Syphilis.*

NEURO-DIAGNOSIS.

THE NATURE AND INTERPRETATION OF THE COLLOIDAL GOLD REACTION.—Karl M. Vogel, *Archives of Internal Medicine*, 1918, vol. xxii, p. 497, writes that it must be emphasized that each of the different tests on the seminal fluid is of value only as a single factor in the entire examination, and that no one test alone is pathognomonic. The colloidal gold reaction is the most sensitive indicator we have of pathologic changes in the spinal fluid, the globulin reaction closely approaching it in delicacy. Uremia, neurasthenia, serous meningitis, hemiplegia and chronic alcoholism may give a cure in the syphilitic zone. If the gold reaction is negative, it is highly probable that the spinal fluid Wassermann will also be negative. An important application of the gold reaction is in the recognition of the earliest stages of cerebrospinal syphilis, and its routine employment in all syphilitics is to be recommended as an aid in the prophylaxis of the parasyphilitic diseases.—*American Journal of Syphilis.*

STUDIES ON THE DIFFERENT REACTIONS (LYMPHOCYTOSIS, BISGAARD, ROSS AND JONES, AND WASSERMANN) IN THE CEREBROSPINAL FLUID IN CASES OF SYPHILIS.—Carl With, *Brain*, Vol. XL., p. 403, thinks we may safely regard a cell count of 4 or less than 4 as normal, and a count between 4 and 10 as suspicious of a pathologic process, and a cell count greater than 10 as definitely pathologic. In regard to the Bisgaard-Ross Jones reaction, if we exclude patients suffering from dementia arteriosclerotica and disseminated sclerosis we arrive at the result that a material of about 150 "control" cases showed an ammonium sulphate value generally one or less, but sometimes as great as two; the nitric acid value is generally fifteen or less, fairly often twenty, and in a few instances twenty-five. The author's observations confirm the general view that lymphocytosis is rare in cases of cerebral tumor, and of spinal tumor. In eighteen patients, in whom the diagnosis was certain, the highest cell count was 3 per cubic centimeter, and even if the five patients in whom the diagnosis was somewhat doubtful be all included, the highest value is 6.7 per cubic centimeter. Thus among 23 cases a definite lymphocytosis was never found. The finding of a pathologic value of Bisgaard-Ross-Jones in the absence of any increase in the cellular count is comparatively rare in syphilis, hence the absence of lymphocytosis in a specimen of cerebrospinal fluid which conatins an increased amount of protein has some diagnostic value. The author's material is too small to allow him to form any definite judgment upon the alleged power of salvarsan to provoke the various reactions in the cerebrospinal fluid, nevertheless, it struck him that several of his cases gave evidence of such an effect. Among the 82 cases of primary syphilis which the author has examined, one of the reactions showed pathologic changes in 6 cases (7.4 per cent.), and in eleven other cases the fluid was not quite normal (13.4 per cent.). Twelve of these 82 cases had been treated previously with salvarsan, and of these 12 cases, in 6 the fluid was more or less pathologic. On the other hand, in 6 out of 72 cases, which had not been so treated, similar pathologic changes were present. These results, therefore, tend to support Gennerich's hypothesis, that salvarsan has a provocative influence upon changes in the cerebrospinal fluid in cases of primary syphilis. Seeing that apparently characteristic soft chancres later on often take on syphilitic character, and as, moreover, the correct diagnosis and proper antisyphilitic treatment is often delayed on account of a previous treatment with, *e. g.*, iodoform or carbolic acid, it has been proposed (cf. Hugo Muller) to treat all soft chancres with injections of salvarsan. The facts detailed above are certainly in favor of this mode of treatment and certainly in each individual case this question ought to be considered. Soft chancres should be regarded as manifestations of serious disease, and for a long time the patient should be regarded as a potential syphilitic and the Herman-Perutz and the Wassermann

tests should be applied at least several times; and, if possible, the cerebrospinal fluid should be examined in all patients suffering from an inguinal bubo, at least when they are in-patients at a hospital. The author has examined the cerebrospinal fluid of 134 patients (55 men and 79 women) at the time of the first secondary syphilitic eruption. The majority of these patients had received no treatment or at most had received only a few inunctions of mercury. In fifteen cases, comprising 6 men and 9 women, the cerebrospinal fluid showed pathologic alterations (10.9 per cent. men and 11.4 per cent. women). Twenty-five cases (12 men and 13 women) showed doubtful pathologic changes (21.8 per cent. men and 14.2 per cent. women); and if the twenty-four cases of leucoderma are included in the list of secondary manifestations we get a total of pathologic changes in the cerebrospinal fluid in 17 per cent. men and 26.6 per cent. women. Of cases of tertiary syphilis exhibiting no nervous manifestations the author has only examined fifteen males and three females. In two of the males at least one of the reactions showed doubtful pathologic changes and in three others the reactions were more or less pathologic. In twelve cases all the reactions were normal; seven of thesewere suffering from a syphilitic orchitis, and a second complained of a perforation of the palate. Four cases of aneurysm of the aorta were examined (three females and one male); in all these the fluid was normal. Specimens from twenty untreated patients, of whom six were males, suffering from active, late hereditary syphilis, were examined. A doubtful reaction (8 cells per cubic millimeter and Bisgaard-Ross-Jones 2-20), probably due to bleeding, was found in the case of a boy, aged nine, who showed syphilitic nodules all over the body. In two girls, suffering from juvenile dementia paralytica, all the reactions were strongly positive, and so they were in one boy aged nine, suffering from Little's disease. In three patients suffering from parenchymatous keratitis, and showing no nervous symptoms, more or less definite alterations were found in the fluids. In only three out of fifteen patients with secondary syphilis affecting the central nervous system was a quite normal cerebrospinal fluid found. Of these three cases one was suffering from atrophy of the left optic nerve, and two from a neuritis of the auditory nerve. Two other cases with an inflammation of the auditory nerves, however, showed pronounced abnormal reactions and both were examples of "nerve relapse" after treatment with salvarsan. The two patients who suffered from the sequelae of a hemiplegia gave definite evidence of abnormalities of the cerebrospinal fluid. In two cases showing an active optic neuritis, pleocytosis was pronounced, and in two cases, combining leucoderma and slight meningeal manifestations, a positive cerebrospinal fluid Wassermann was obtained. The author has examined the cerebrospinal fluid in fifteen treated and eight untreated cases of cerebrospinal syphilis and found no differences between the treated and untreated cases. In only three cases suffering from slight cerebral symptoms, the cerebrospinal fluid was normal, or almost so in twenty cases the proteins were increased; in seventeen the number of cells was increased and the Wassermann reaction in the cerebrospinal fluid was positive in twelve cases. The author has made observations upon eleven cases of dementia paralytica where the diagnosis was fairly certain, and upon nine more doubtful cases; in all the cerebrospinal fluid showed abnormal reactions. In all the twenty cases pleocytosis was present, but occasionally its degree was small. In all cases the Wassermann reaction in the cerebrospinal fluid was positive. All cases, with the exception of one, showed high or fairly high values with the nitric acid test as well as a comparatively high globulin fraction. The author counted the cells in nineteen cases; in eleven a pleocytosis varying from 10.3 to 123 cells per cubic millimeter was present, in five the cell count was normal and in three from 5-6.7 cells were found. In six untreated cases of tabes the Bisgaard-Ross-Jones was abnormal in five, and in thirteen previously treated cases abnormal values were found in ten. In nineteen cases the cerebrospinal fluid Wassermann was positive ten times and negative in nine cases. Judged by thirteen cases of secondary and two cases of primary syphilis,

the reactions in the cerebrospinal fluid in patients showing no nervous symptoms or signs are fairly readily influenced by treatment with mercury or (and) salvarsan. In eight cases a more or less severe lymphocytosis disappeared completely, or almost completely; in three cases, in which lymphocytosis was present, the cell-count after four to six weeks' treatment remained practically unaltered, and in four cases the cell-count fell rapidly after treatment. The Bisgaard-Ross-Jones reaction before treatment was normal or almost normal in six cases, and in nine others after treatment became normal or almost normal. A slightly positive Wassermann reaction in the cerebrospinal fluid was found six times; after a single injection of neosalvarsan in all cases this reaction became negative. Thus treatment rapidly influences the reactions in the cerebrospinal fluid from cases of early syphilis.

The author's observations seem to suggest that the different reactions are somewhat more difficult to influence in tertiary than in secondary syphilis. In eight of the twelve cases of tertiary syphilis at least one of the reactions were favorably influenced and none were intensified, while the clinical symptoms generally diminished; four of the cases were somewhat inefficiently treated, and in two the reactions were little altered, and in the other two the reactions were influenced in different ways. The author treated seven cases of paresis with mercury and intravenous injections of salvarsan or neosalvarsan. In six out of seven cases the lymphocytosis diminished from a high pathologic level to a more or less normal count. In five cases the Bisgaard-Ross-Jones diminished, in two in rather an irregular fashion. The Wassermann reaction, in contrast with the cell count and the Bisgaard-Ross-Jones reaction, changed in a more irregular fashion, but for a short period in all this reaction was influenced favorably. The author examined the influence of treatment in eight cases of tabes dorsalis. The lymphocytosis diminished gradually in three cases, was unaltered in one case, and diminished in another from 88 to 33 per c.mm. after treatment, later to relapse and yield 78 cells per c.mm. The Bisgaard-Ross-Jones gradually became less definite in five cases, but was practically unaltered in two cases. The Wassermann reaction in the cerebrospinal fluid was very variable in two cases, but on the whole tended to become more positive; in two cases the reaction was not affected by treatment and in two cases became negative.—*American Journal of Syphilis.*

BOOK REVIEWS.

HANDBOOK OF MENTAL EXAMINATION METHODS. By Shepherd Ivory Franz, Ph. D., M. D., L. D. S., Scientific Director and Psychologist, St. Elizabeth's Hospital (Government Hospital for the Insane); Professor of Physiology and Experimental Psychology, George Washington University. Second Edition. Revised and enlarged, with 41 figures and diagrams. The Macmillan Company, New York, Publishers.

Since diagnosis is the *sine qua non* of the successful practitionery, and since the diagnosis depends directly upon a thorough and complete clinical examination and its interpretation, for which there has been a decided advance in refined diagnostic methods the past few years in the field of neuro-psychiatry, such a work as the one before us should be welcomed by the progressive practitioner.

This is a new and completely revised edition and, in addition to corrections and alterations in every chapter, there is added one new chapter, dealing with mental testing, thus bringing the work up to date.

Although a scheme for a general neurological examination is wisely given, the work is primarily intended to cover the psychological examination, for which the author has selected methods which not only serve to show certain phases of mental processes, but which at the same time are easy to perform and are sufficiently accurate for certain kinds of research, as well as for routine clinical purposes.

Those interested in the domain of psychiatry will find this a practical guide to diagnosis.—D. S. B.

THE SOUL IN SUFFERING,—A PRACTICAL APPLICATION OF SPIRITUAL TRUTHS. By Robert S. Carroll, M. D., Medical Director, Highland Hospital, Asheville, North Carolina, and author of "The Mastery of Nervousness." The Macmillan Company, New York, Publishers.

An exceedingly readable book containing much of practical value to all, whether ill or well, and, though to the ill, it gives wholesome advice for regaining health, it breathes a spirit of optimism and Christian fortitude to the sufferer—whether of body, mind or soul, and shows that pain and suffering or not unmixed evils.

The author refers to pain as "a warning voice that would protect," saying: "Each pain has its message to those who will patiently and intelligently listen. Each sleepless night has its significance which may be recognized as a guiding hand, by the eye of understanding"—facts well understood by the medical profession, but too little known by the laity, greatly to the disadvantage, if not to the discredit of the profession, which has not exerted itself to properly instruct the laity in many things which would benefit the layman and materially aid the physician in his relations with the afflicted; hence, this volume is a step in the right direction.—D. S. B.

THE INTERNAL SECRETIONS AND THE NERVOUS SYSTEM.—By Dr. M. Laignel, Lavastine, Paris. Authorized translation by Dr. F. T. Robeson, New York. Monograph series, No. 30. Price $0.75. Mental Disease Publishing Company, New York and Washington.

Increasing knowledge of endocrinology but magnifies its importance and discloses the close interrelation between the ductless glands and the nervous system—even the physical make-up of the individual, so that we have nervous disorders due to

disturbances of internal secretions, and disturbances of internal secretions due to nervous disorders.

This work treats of the endocrine glands from a pathological standpoint, which, however, necessitates a certain consideration of the physiology of the glands, as well as of the vegetative system—the autonomic and sympathetic.

The author enumerates the symptoms composing the various syndromes of each endocrine gland; then treats of polyglandular syndromes; finally, considers the endocrino-nervous—including the psyche-relationships.

While the work is brief and to the point, it is provided with an extensive bibliography for those wishing to pursue the study further, as every progressive practitioner should and probably will.—D. S. B.

VEGETATIVE NEUROLOGY. By Heinrich Higier, of Warsaw. Authorized translation by Walter Max Kraus, A. M., M. D., New York. Nervous and Mental Disease Monograph Series, No. 27. Price $2.50. Nervous and Mental Disease Publishing Company, New York and Washington.

This is an exhaustive treatise on the vegetative nervous system, including its—antagonistic—subdivisions, the autonomic and sympathetic, and doubtless contains all that is known of this important division of the general nervous system.

It treats of the comparative macroscopic and microscopic, anatomy; the histology, physiology, pharmacology, pharmacodynamics, general and special pathology, and clinical aspects of the vegetative nervous system; besides, it gives due consideration to the relationship of this system to the endrocrine glandular system, the various glands of which, either directly or indirectly, affect the vegetative system, and *vice versa*, the vegetative system influences the action of the glands.

Several large cuts materially aid in clarifying and fixing in the mind this complex subject, thus adding to the practical value of this most valuable work.—D. S. B.

SQUIBB'S MATERIA MEDICA FOR THE PHYSICIAN AND THE SURGEON.—A complete alphabetical list of the Squibb products, including all the articles of the United States Pharmacopoea (IXth Revision) and of the National Formulary (IVth, 1916 Edition), together with the non-official chemicals, pharmaceuticals and newer remedies in general use; setting forth their origin, Latin and English titles, synonyms, physical and chemical characteristics, incompatibilities, antidotes, therapeutic indications, doses, etc.; also, a comprehensive descriptive list of tablets for internal and hypodermic use, of biological products and of reagents, including test solutions, volumetric solutions and indicators. 1919 Edition. Published by the Medical Department of E. R. Squibb & Sons, New York.

This is a desk copy designed especially for the physician and the surgeon to whom it is supplied gratis, and who will find it a valuable and handy therapeutic guide and remembrancer.—D. S. B.

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THE JAMES-LANGE THEORY OF THE EMOTIONS. ITS RELATION TO PSYCHIATRY.

By

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PERHAPS no question in the sciences of Physiology and Psychology has aroused so much discussion on the part of investigators as has that of the emotions, their origin, significance and physiological manifestation. The philosophers and psychologists were the first investigators in the field, and as the methods of these researchers were, for a long time, purely speculative, little was accomplished other than the mere cataloging of the various outward changes to be observed in the organism under emotional strain, along with some attempts at classification of the different kinds of emotion.

From the time of the ancients, to Darwin (1), Mantegazzi (2), and others, speculation was much the same. Darwin did by far the best work of his time on the description of the objective signs in animals under emotional strain together with the biological significance of such signs. However, little was accomplished of a physiological nature, until our own William James, (3) in 1884, and C. Lange (4), the following year, working independently of each other, brought forth the problem to be re-examined in the light of the science of physiology and formulated the theory which now bears their names.

The concomitance of emotional states and of changes in the bodily structures, which we know now to be controlled by way of the autonomic nervous system, had been observed and speculated upon long before the advent of the James-Lange Theory. Prior to 1884, the general conception existing in Psychology had been to the effect that: the conscious perception of a fact excited a mental affection called the emotion, which in turn set into activity the bodily expression of the emotion, that is, the sum total of motor phenomena such as vaso-constriction or vaso-dilatation in the muscles, viscera, and so forth; acceleration of the respiratory or cardiac mechanisms, cessation of alimentary phenomena, stimulation of the nerves controlling the arrectores pilorum, and so forth, as the case might be. James (5) brought forward a very different viewpoint, however, when he stated the theory that "the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur is the emotion." In the light of this theory, an emotion constitutes, then, merely

a conscious feeling or sensation, in the production of which the afferent impulses coming from structures under the control of the autonomic nervous system play the leading role.

Paradoxical though it may seem, this theory is at the present time accepted by a respectable number of psychologists and physiologists. It has also received some adverse criticism, the most authoritative perhaps being voiced by Doctor Sherrington (6). On reviewing the evidence at hand, however, the question seems, in the opinion of the writer, to be still an open one with the preponderance of evidence in favor of the James-Lange Theory.

Experimental proof of the theory is beset with many difficulties. The predominant factors entering are: (1) the reactions of the autonomic nervous apparatus; (2) the reactions of the cerebral cortex. Experimental methods controlling the processes occurring in these two mentioned mechanisms are exceedingly difficult of interpretation in the present state of our technique. The proof, if we are to have any, will have to be adduced from the data at hand of Anatomy, Physiology, Pathology, Psychology and Psychiatry.

Before further discussion of the theory is undertaken, a brief reference to some of the researches made on the structure and function of the cerebral cortex since James' time will not be out of place here. However, it is not the writer's intention to review at this point all the splendid work done on cerebral localization, beginning with the somewhat unfortunate conclusions of Francis Gall, through the work of Broca, Flourens, Munk, Ferrier, and scores of others, to the microscopic researches of Flechig (7) and co-workers. Suffice it to say, that in the light of the data reviewed, it seems logical to believe that the cortex is divided into areas which (though containing both projection and association fibres) are primarily motor, sensory and associative. For a splendid review of the known facts at the present time, the reader is referred to Professor Eugenio Tanzi's work on Mental Diseases (8).

The sensory area of the cortex contains nerve cells which receive endogenous and exogenous stimuli through every receptor in the body whether specialized or otherwise. The mnemonic representations of these stimuli are stored in mechanisms* in the associative areas, mirror images, as it were, of the original stimuli. These mirror image stimuli, as we shall call them, are capable of being themselves revived, bringing about motor adaptation of the organism to its environment by means of the upper and lower motor segments, and as we shall also see, acting through the efferent paths of the autonomic nervous system. All of our motor apparatus, voluntary or involuntary, are first roused into activity reflexly; the sensations resulting from the activity of these reflexes are carried to mechanisms in the sensory area of the cortex while the mnemonic representation of them is held within similar mechanisms in the associative areas; it is by the revival of these stored stimuli that we are able to initiate movements at will. In short, our motor apparatus is subject through reflex action to exogenous stimulation in a measure apart from volition; in addition, it is potentially subject to a far greater number of stimuli coming from within; namely, the mnemonic representations of original endogenous and exogenous stimuli stored in the cortex. The great difference, then, between a spinal animal and one with intact cerebrum lies in the fact that the spinal animal is subject to reflex environmental stimuli plus a few arising within its own body such as originate in the various viscera; while the motor paths of the animal with intact cerebrum is subject not only to the same stimuli as those of the spinal animal, but also, to the vast number of mirror image stimuli held within the cerebral cortex, together with the almost limitless number of complexes resulting from the fusion of these simpler elements. The animal possessing a cerebral cortex is still a reflex animal, but his efferent paths are subject to more stimuli with all the inhibitions and reactions made

*Whether these mechanisms in question are in groups of cells themselves, or at the points of contact between the neuro-fibrils of the groups of cells, or in the neuro-fibrils themselves, cannot be stated with certainty in the present state of our knowledge.

possible by innumerable permutations and combinations of stimuli, memory images and complexes. Every reflex mechanism or pattern, when first set into operation, originates a stimulus which is carried to the cerebral cortex, the memory of which remains capable of acting as a mirror image stimulus with the ability of exercising an influence on the particular reflex which first aroused it.

The discovery (in the somaesthetic zone of the cortex by Hitzig, Landois, Richet, and others) of centers presiding over visceral activities, with their more recent confirmation by such workers as Francois-Frank and Bechterew, need imply nothing more than that these centers are those mechanisms which first received and stored the sensations produced by the reflex stimulation of the organ in question; and that these same mechanisms possess the means of reviving within themselves stimuli, which by passing through the motor paths of the neural axis are capable of influencing the viscera over which they preside. Whether the stimuli arise within the mechanisms themselves or be produced by the electric current, the motor effect observed would be the same.

Researches of Pawlow (9) on the conditioned reflex adds proof to this view. This worker divides reflexes into: (1) unconditioned reflexes, or those which invariably respond in a fixed manner to appropriate stimulation—the response of the iris to light may be taken as an example of this class, and (2) conditioned reflexes, or those which may be elaborated through the cerebral cortex under certain conditions.

Pawlow has made an exhaustive study of this type of reflex by means of the mechanism of salivary secretion in the dog. He found that if at the same time of stimulating the salivary glands of the animal (either mechanically or by means of food) he caused a tone of, say, eight hundred vibrations to be sounded, after a time all he had to do to produce an active secretion of the gland was to sound the tone of eight hundred vibrations; no additional stimulation being required. Also, he found that the gland did not secrete when a tone of eight hundred and twelve vibrations was sounded. In short, an association path had been formed between the mechanisms in the cortex receiving the sensations produced by the stimulation of the gland and the mechanisms for storing the memory of the tone of eight hundred vibrations. Thereafter, the sounding of the tone served to induce the reflex of glandular secretion, the afferent portions of the reflex in this case emanating from the cerebral cortex.

This experiment has its analogue in the familiar observation of one's mouth "watering" at the sight of articles of sour food, limes, lemons, and so forth. Of course, the first sight of a lemon to a newly born child evokes no salivary secretion; however, when the child first tastes a lemon, the salivary glands are stimulated to activity reflexly, because their mechanism is potentially constructed for such response to adequate stimulation. At the same time the gland is set into activity, the sensations produced by the stimulation and secretion is carried to the cerebral cortex and there stored in at least two mechanisms, one in the somaesthetic zone, the other in an appropriate associative area. Following this, the sight or even the memory of a lemon serves to release a stimulus bringing about activity of the salivary glands. The counterpart of such mechanisms in the cortical areas of the lower animals are in all probability the areas stimulated electrically and outlined by Francois-Frank and his co-workers and designated by them as the centers for salivary secretion. Similarly it is with other centers controlling visceral reactions.

To return to our problem; can the foregoing experiments and observations be made to harmonize with the James-Lange Theory of the Emotions? Will they help to decide the following questions? (1) Does (as the older psychologists taught) the reception of a stimulus calculated to produce a response of an emotional nature produce a psychic state which we call the emotion, that spreads through nervous paths to the viscera and there produce the bodily changes common to emotional accompaniment? Or, (2) does the same stimulus which excites consciousness, at the same time pass to the centers controlling the viscera and initiate in them the bodily changes which

are reflected back to the cortex along afferent channels, producing in consciousness a sensation or state of feeling which we term the emotion? This last is the essence of the James-Lange Theory.

Psychologists prior to James did not seem to be able to differentiate between two states of consciousness so totally foreign to each other as an intellectual awareness and an emotional state. There is certainly a sharp distinction between the two. For example, if we are subjected to a stimulus of a class calculated to produce an emotional reaction, say that of anger, it is quite possible that at the same time we become aware of the bodily reaction, that we would also possess a fleeting state of cognition that the stimulus to which we are subjected is of the sort calculated to arouse anger and resentment. In this instance we have two sets of neural processes set into activity, both bent on obtaining the final common path to the cerebral cortex, each intent on gaining and retaining the center of consciousness. The original stimulus initiates two sets of nervous processes at the same time; one set traveling directly to the cortex producing an intellectual state of awareness in consciousness as to its presence, nature, and so forth; the other set traveling to the viscera initiating there changes which are capable of being reflected along afferent autonomic fibres back to the cortex producing there a complex of sensations which we designate as an emotion. If the first set of nervous processes traveling directly to the cortex maintains the final common path, an intellectual awareness concerning the stimulus will occupy the center of consciousness; if on the other hand, the reflex currents from the viscera gain the final common path, the intellectual awareness is blotted out by a more primitive sensation or state of consciousness which we term an emotion. Without the conscious perception of the stimuli coming from the structures under autonomic control, there would be no emotion. James himself points out that if we subtract from an emotional reaction all of the organic reverberations, only a cold intellectual state is left us. Many of us no doubt can testify that on one occasion a stimulus arouses us to a point of violence, while on another the same stimulus merely evokes a state of cognition that it was of a sort calculated to produce anger or resentment. In the former instance, the stimuli from the viscera gain the final common path to the cortex; in the latter, they do not.

It has been pointed out by opponents of the James-Lange Theory that the memory of an insult or sorrow is capable of producing just as pronounced a bodily reaction as did the original stimulus. This is said to be a proof that the psychic state or emotion is capable of inaugurating the bodily change. This fact is true, but the foregoing interpretation is entirely wrong. Here we must review the principles of the physiology of the cerebral cortex. The cortex possesses the ability to receive and to store the mnemonic representations of our original environmental stimuli, and when occasion arises to reproduce a mirror image of the original stimulus which image stimulus is capable of originating a response similar in every way to that produced by the original stimulus. If processes arising in the cerebral cortex ever initiate a visceral change, they do so in the manner just outlined, in which case the visceral reaction instead of being produced by a stimulus from the environment, is produced by the mirror image of that stimulus arising within the mechanisms of the cortex and the resulting visceral stimulation is carried by the afferent fibres of the autonomic to the cortex, there giving rise to the sensation which we term an emotion. The same factors operate here that operate to bring into play the conditioned reflex studied by Pawlow. When a salivary gland is stimulated in a special manner, thereafter all that is needed to excite the gland to activity is the memory of the original stimulation. So is it with the visceral reactions giving rise to our emotions, they are aroused to activity first by exogenous stimulation; later, however, these same bodily reactions may be aroused by endogenous stimulation, the source of the stimulus being the memory image of the original, emanating from the cortex.

The Production of Abnormal Emotional States.—Turning to Psychiatry and

Neuriatry, we encounter a large group of conditions which may be termed the affective psychoses and neuroses, the predominant symptom of which is a very unstable emotional equilibrium. The Manic Depressive group, the anxiety neuroses, the cases of "shell shock," may be taken as examples of this group. In these conditions, we may find all grades of emotional feeling ranging from mild anxiety, fear, deep depression, to excessive good spirits, violent anger and of all of the extreme emotional reactions of an acute mania. If the emotions are produced in the manner suggested by Professor James, then we should seek the physical basis of abnormal emotional manifestations in the structures affecting the autonomic nervous system (that is, the glands of internal secretion) in the visceral organs, and in the autonomic nervous system itself.

Viewed from this angle, the emotions could not be considered as causes of the disease in question (which view is advocated by writers on "shell shock," Grave's Disease, and so forth), but the emotional states which are observed in such diseases are purely symptoms of a physical change existing in the brain, the autonomic nervous system, the organs controlling it (glands of internal secretion), and the organs under its control.

We must bear in mind, however, that in our problem we have two distinct sets of variables operating: (1) the processes occurring in the structures associated with the autonomic nervous system and in the system itself; (2) the processes taking place in the cerebral cortex. The source of origin of an abnormal emotional state may operate from either or both. A pathological condition affecting the first set of the above mentioned factors may cause them to react inordinately on a comparatively normal cortex to such an extent that the cortex is unable to inhibit the visceral elements and confine them to normal emotional manifestation. This probably explains the very unstable emotional reactions occurring among women who are pregnant. Women are more emotional than men, due to the predominance in them of enteroceptive sensation over that in the male.

On the other hand, the cells of the brain may be so altered by infection (10), fatigue (11), and "shell shock" (12) that the threshold of the individual neurones is so lowered that the normally present visceral reactions which pass as unnoticed in the normal, assume pathological proportions manifesting themselves in the symptomatology of abnormal emotional reactions. The types of anxiety and fear which are referred to various parts of the body, for example, precordial anxiety in the various anxiety neuroses where only slight or no cardiac abnormality presents itself, may be taken as examples of this.

Unfortunately we have few ways of experimentally examining the processes occurring in the autonomic nervous system. However, blood pressure examination does furnish some evidence. In the report published by Dr. Ball (13), the very interesting fact presents itself that in the depressed phase of Manic Depressive Insanity the blood pressure was considerably raised. Observation on the same patients showed that it was lowered during the manic phase, with a return to normal during the normal mental periods. In Manic Depressive Insanity we have marked abnormalities in the emotional sphere without sufficient exogenous or endogenous stimuli being present to account for such abnormalities. The reasons given by such patients for their good spirits or depression are often of the flimsiest. But examination of the blood pressure discloses evidence of marked changes in the functions of the autonomic nervous system, and it is a significant fact that these changes are the same as would occur had the existing emotion been provoked normally. A normal person subjected to a stimulus of the sort calculated to induce the emotional state of fear or depression has immediate vasoconstriction in the viscera with raised blood pressure; subject the same person to the stimulus conducive to joy, well being, or happiness, and his peripheral blood pressure is lowered. This is the situation we encounter in Manic Depressive Insanity with the

exception that the adequate stimulus is absent, only the vaso-motor change being present.

Opposed to the James-Lange Theory we have some observations made by Doctor Sherrington (14) on a dog on which the operations of double vago-sympathetic and spinal section had been performed, such surgical procedure excluding from consciousness all visceral and vascular reactions caudal to the sections. Doctor Sherrington states that the animal so treated, as before the operation, displayed fear at being scolded, anger at unwelcome visitors, joy at receiving attention from loved attendants, and disgust at being given dog's flesh to eat. From these and other experiments he argues that "the vaso-motor theory of the production of emotions is * * * * untenable, also that the visceral sensations or presentations are not necessary to emotion."

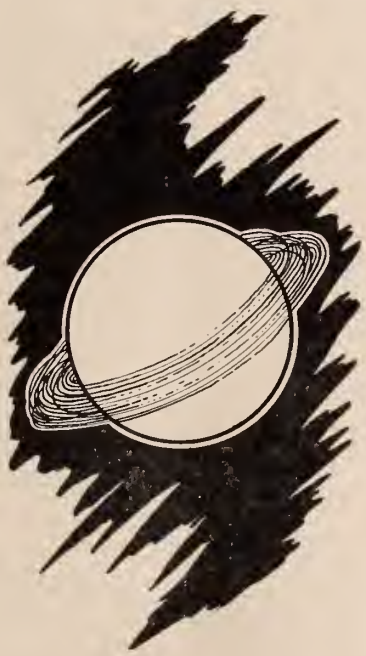
A weak point in these experiments, as Sherrington himself recognizes, is the fact that a small but notable portion of the muscular expression of emotion, namely, the facial, still retained the power to react on the centers colligate with consciousness. A still weaker point, it seems to the writer, is the fact that the phrenic nerve was still intact containing both sensory and motor fibres, allowing the type of respiration peculiar to emotional stimulation to take place with its resulting effect upon consciousness. Sherrington states that the respiration of the dog in the experiment became unquiet when the animal displayed anger or fear. Moreover, the animal still possessed an intact cerebrum and was capable of reviving the memory of rage, fear and joy. Concerning this part of the experiment, Professor Lloyd Morgan (15) writes: "The avenues of connection were closed after the motor and visceral effects had played their part in the genesis of the emotions on the hypothesis that the emotions are thus generated. Although new presentative data of this type were thus excluded their representative after effects in the situation were not excluded." These factors would help to account for the evidence of joy, fear and anger observed by Doctor Sherrington, without being opposed to the James-Lange Theory. As for the emotion of disgust, it seems unreasonable to assign to what was likely a pure olfactory and gustatory reflex, the dignity of an emotional state.

It is well to remember in interpreting Doctor Sherrington's experiments, that in the lower animals the objective signs of the "bodily expression of the emotions" may be present when we know that the animal under observation experiences no emotion. All psychologists and physiologists at the present time assign to the emotions a place in the cerebral cortex. A cerebral cortex is absolutely essential to the experience of an emotion. Not so with the "bodily expression of the emotions," however. An animal with all higher centers destroyed as far down as the thalamus will evidence all the outward signs of experiencing pain or anger, yet we are reasonably sure that these are only pseudo-affective reflexes. Goltz calls attention to the fact that a decerebrate dog will turn just as fiercely on the person holding his foot too tightly as does a dog with intact cerebrum, yet we are sure the decerebrate animal does not experience anger. We assume the purring of a cat to mean the bodily expression of the emotion of pleasure, but because a decerebrate cat will purr vigorously when stroked does not constitute evidence that the decerebrate cat is experiencing the emotion of pleasure. Finally, it may be said that it is a far distance from the reactions of mutilated animals to the human emotions.

In the light of the evidence, the writer can only restate that the question of the genesis of the emotions is still an open one with the preponderance of evidence in favor of the James-Lange Theory. The theory deserves the consideration of the psychiatrist if for no other reason than that it offers a physical basis for the origin of the abnormal emotional reactions observed in the affective psychoses and neuroses.

BIBLIOGRAPHY.

1. Darwin: Origin of the Emotions.
2. Mantegazzi: *La Physionomic et l'Expression des sentiments.* Paris, 1885.
3. James. Principles of Psychology, Volume 2, Mind, 1884.
4. C. Lange: Ueber Gemüthsbewegungen. Uebersetzt von H. Kurella, Leipzig, 1887.
5. James: Opus, cit. page 449.
6. Sherrington: The Integrative Action of the Nervous System, page 265, Yale University Press.
7. Flechsig: *Die Leitungsbahnen im Gehirn und Rückenmark*, 1876.
8. Eugenio Tanzi: Mental Diseases. Trans. by Robertson and Mackenzie. Redman and Co., New York.
9. Pawlow: The Work of the Digestive Glands, London, 1902. Also,
   Pawlow: "*Livre jubilaire du Professeur Charles Richet*," 1912.
10. Crile: The Relation Between the Physical State of the Brain Cells and Brain Functions. The Origin and Nature of the Emotions, page 111. Published by W. B. Saunders Co., Philadelphia, Pa.
11. Crile: Phylogenetic Association in Relation of Certain Medical Problems. Loc. cit., page 10.
12. Mott, F. W.: The Brain in Shell Shock. *British Medical Journal*, November 10, 1917, pages 612, 615.
13. J. D. Ball, M. D.: The Relation of Gastro-Intestinal Toxemia to Circulatory Hypertension in the Manic Depressive Forms of Insanity. *American Journal of Insanity*, 1911-12.
14. Sherrington: The Integrative Action of the Nervous System, pages 255 to 269.
15. Lloyd Morgan: Animal Behavior, London.



SYPHILIS AS AN ETIOLOGICAL FACTOR IN EPILEPSY.*

By

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ALTHOUGH epilepsy is defined on the basis of an entity as a chronic disease characterized by recurring attacks of loss of consciousness, with or without tonic or clonic spasms, or both, it is in reality but a syndrome resulting from various conditions which through their action on the brain produce a sudden involuntary discharge of nervous energy. In other words, it is the manifestation of the involuntary conversion of potential into actual energy through instability of the cerebral neuronic hierarchy—either an excessive irritability of the sensoro-motor centers or diminished control (inhibition)through debility of the psycho-motor area.

Since epilepsy is but the manifestation of various conditions, some known and discoverable by a thorough and complete examination, others unknown and not discoverable even *post mortem* by any means yet known—so-called idiopathic—it is impracticable to study the various causes and theories in a single essay, hence, we shall confine our discussion to but a single causative factor, viz., syphilis.

Although it is generally recognized that syphilis can and does cause epileptic manifestations which are indistinguishable from true or idiopathic epileptic spasms, there is a wide variation between different observers as to the frequency of syphilis as an etiologic factor, at least to the degree that it may be considered the sole cause. That it is the single causative factor may at times be impossible to demonstrate, since it is generally recognized that there are always two elements in the development of every disease, viz., the predisposing cause, or the condition of the system which permits the development of the disease, and the direct exciting cause, or that which precipitates or "kindles" the disease.

It is generally recognized that syphilis may operate, (1) through the mechanism of an overwhelming toxemia; (2) through the effects of a meningitis, encephalitis, gumma, endarteritis of the finer vessels, exostosis, etc., and (3) as a hereditary factor through a basic impairment of the germ plasm.

It appears evident that there must be a peculiar condition of the nervous system, inherited or acquired, that enables an irritant, whether toxic or otherwise, to produce stereotyped attacks in certain individuals and not in all having a similar exciting factor.

That this predisposing condition may be due to a basic impairment of the germ plasm though not demonstrable by present methods of investigation, is recognized by many observers.

Bingswanger** speaks of a dyscrasic form of heredity syphilitic epilepsy. Mott writes that, "the question whether syphilis of the parents can modify the germ plasm so as to render it biochemically unstable, whereby a slight excitation suffices to produce a fit, like the spark in a powder magazine causes an explosion, is one that cannot be satisfactorily answered. Yet we should rather expect that such a poison could influence the germ plasm so unfavorably as to affect the proper development of its

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**A System of Syphilis, by Powers & Murphy, Vol. 4, p. 441.

most complex and highly differentiated product—the cerebral cortex." The author continues: "without attempting to give any precise data, I am of the opinion that syphilis and alcoholism of the parents may influence the germ plasm and per se lead to the production of imbecility and symptomatic epilepsy."

On the other hand, it is well known that syphilitic focal lesions or syphilitic toxemia may be the direct exciting cause, from which it appears possible that syphilis may in a given case be both the predisposing and exciting cause of epileptic attacks.

Most text books merely refer to syphilis as one of the causes of epilepsy without any reference to its frequency or the manner in which it acts.

Clinicians who give any consideration to the frequency of syphilis as an etilogic factor differ in their conclusions and few have found it to be a very frequent cause.

Dana* writes: "The Wassermann test for syphilis in epileptics has brought but a small percentage of positive reactions.

Spear** says: "Syphilis may be the etiological factor in generalized epileptiform seizures, but in most cases the epileptiform seizures that occur in cerebral syphilis are merely symptomatic of the underlying disease."

Osler believes that convulsive seizures due to acquired syphilis of the nervous system is very common.

Bingswanger asserts that congenital syphilis plays a much more important predisposing role in the production of epilepsy than is generally imagined.

Nonne† writes: "Everyone who has seen many cases of epilepsy knows that frequently a syphilitic infection stands alone as the only etiological factor though this is the kind of epilepsy which cannot be distinguished from the idiopathic form." He mentions a post syphilitic form in which attacks of petit mal sometimes occur between the severe attacks.

Church†† writes that "Syphilis may be casually related to epilepsy in various ways: (1) as a hereditary factor; (2) through the malnutrition of the secondary period; (3) by local encranial disease, and (4) Fournier thinks there is a peculiar syphilitic variety of epilepsy appearing late in the luetic history."

Spratling‡ states he is "unable to present figures that indicate the frequency with which inherited syphilis predisposes to epilepsy, or causes it in any form, essential or unessential, and must be content to state that its power in either of these directions must occasionally be reckoned with."

Available statistics give syphilis as infrequent in epileptics (from 5 to 14 per cent), while reports of most serologists give a small percentage of positive Wassermann reactions in both the blood and spinal fluid, with variable and inconstant findings in the latter as to pressure, pleocytosis and globulin content, though frequently there is a considerable deviation from the normal reaction of the Lange colloidal gold test.

Kaplan‡‡ records only four out of thirty-eight sera from epileptics as giving a positive Wassermann reaction and states that "the Wassermann reaction on the cerebrospinal fluid was negative in every instance, the original Wassermann method being used. In one case with a positive Wassermann reaction the serum in the cerebrospinal fluid also showed twenty-three lymphocytes per c.m. The etiologic factor in this instance was most likely syphilis. In another case with a positive Wassermann reaction the symptoms disappeared entirely after antiluetic treatment; the positive Wassermann, however, remained unchanged. The reaction was performed three times

*Text Book of Nervous Diseases, eighth edition, p. 475.
**Manual of Nervous Diseases.
†Syphilis and the Nervous System, second edition, p. 173.
††Nervous and Mental Diseases, Church & Peterson, eighth edition, p. 641.
‡Epilepsy and Its Treatment.
‡‡Serology of Nervous and Mental Diseases.

with the same result. That syphilis plays an important role in some epileptics must be conceded."

While it is true that an epileptic with syphilis is not necessarily a patient with syphilitic epilepsy, it may possibly be true that epilepsy may be due to syphilis notwithstanding a negative blood serum and cerebrospinal fluid. It is known that syphilis may be present, notwithstanding a negative Wassermann of both blood and spinal fluid, especially by the original Wassermann method, viz., with a small quantity (.2 c.c) of the fluid, so that it is not improbable that it may be undiscoverable by any of the known methods of examination, especially if it be true, as previously noted, that syphilis may act through a "basic impairment of the germ plasm."

If it is possible for syphilis to be present in an epileptic without giving any diagnostic evidence, it may be argued that the disease should at any rate respond to antiluetic treatment, which is untenable; since a disease or condition is not necessarily cured by treatment directed to the cause; hence, the fact that symptoms presumably due to a frank syphilis, do not recover after all clinical and serological evidence of syphilis has disappeared, does not necessarily argue against a syphilitic origin.

This should be so evident as to require no proof, though it is often overlooked, because we are so accustomed to favorable results in the treatment of syphilis that doubtful cases are often decided by the "therapeutic test."

Another source of error arises from depending too much upon the laboratory findings and too little upon the findings of a critical clinical examination.

M. H., female, aged 12, pupil, came under observation March 14, 1915, with a history of typical grand mal epileptic attacks of several months' duration; at first attacks occurred every two weeks, but soon increased in number until she was having several attacks each day, together with ten to twenty petit mal attacks, one of the latter of which occurred during an ordinary consultation in my office.

Family history: negative; father died of pneumonia.

Personal history: ordinary diseases of childhood, from which she made good recoveries; no history of injury; no coffee; drank one cup of tea daily until after attacks began; for some time prior to attacks, complained of being tired and had slight periodical headaches; sleep poor, occasionally marked sleeplessness; appetite variable; bowels regular; kidneys act normally; first menstruation two months ago, flow scanty, no pain; no return.

Objective examination: well developed; weight 71½ pounds; no evidence of injury to head; musculature of eyes good though pupils do not dilate fully and contact sluggishly to light; nostrils free; no enlarged tonsils; tongue coated with white fur with papillae showing through; teeth in good condition; all superficial cervical, and the submental and epitrochlear, lymphatic glands easily palpable; the left epitrochlear gland being as large as a small hazel nut; thyroid normal; all tendon reflexes exaggerated; no pathological reflexes; no ankle clonus; blood gave a four plus Wassermann reaction.

Patient placed on mixed treatment of mercury and sodium iodid, with sodium bromid to control the attacks. The iodid was rapidly increased to 60 drops of a saturated solution three times a day.

Attacks rapidly decreased in frequency until June of the same year when she had one attack, after which she was free until August 9, nearly five months after beginning treatment, when she had a nocturnal attack at 5:30 a. m., which proved to be the last attack, though the patient has taken nothing to control the attacks for over eighteen months, during which time she has attended school and taken piano lessons, making unusually rapid progress in both.

The day following last attack, August 15, 1915, the thyroid gland was noticeably enlarged, pulse 96, no exophthalmos and no tremor. The swelling disappeared in about three weeks.

On account of a great deal of illness in the family it was impracticable to have other Wassermann tests, made but patient is now off treatment with that object in view.

Mrs. L. S., aged 24, married four years, never pregnant, for which she could assign no cause, came under observation September 23, 1915.

Family history: negative, save paternal grandmother had epilepsy after 60 and continued at infrequent intervals until death at 80.

Personal history: seriously ill with scarlet fever when 10 years of age, apparently complete recovery; several attacks of night terrors when 9 years of age; less than one cup of coffee a day; sleep poor and accompanied by "visions" during which she feels as though in a trance; tired mornings; appetite poor; bowels move only with aid of medicine. No history of injury.

Has had diurnal and nocturnal attacks of epilepsy for past several years, and though she has been under almost constant treatment, changing physicians several times, the attacks have grown

progressively more frequent until she has from ten to twenty in twenty-four hours, most of which are of the petit mal type.

The diurnal grand mal attacks are ushered in with a scream after which she falls, bites tongue, froths at mouth, has tonic and clonic spasms, after which she attempts to tear off clothing, all lasting about five minutes, followed by sleep. The nocturnal attacks occur every half hour and characterized by screaming and acts of violence, followed by incessant incoherent talking for several minutes.

Objective examination: patient is tall, thin and anemic; no evidence of injury to head; pupils active; impacted cerumen in both external auditory canals; nostrils free; tongue coated; tonsils not enlarged; teeth in good condition; all superficial lymphatic glands palpable; all tendon reflexes exaggerated; no pathologic reflexes; no ankle clonus; no Rombergism; blood pressure, 90; urinalysis: clear, colorless, specific gravity 1005, no albumin, phosphates in excess, quantity in twenty-four hours, 4 pints. Since last attendant had taken specimens of blood on which no report could be obtained, would not consent to another examination. Patient placed on calcium bromid, laxatives and general reconstructives.

October 5, only two attacks past twenty-four hours. Urinalysis: light yellow, clear, specific gravity 1008, trace of albumin and excess of phosphates.

November 2, 1915, improved; urinalysis: clear, light yellow, acid, specific gravity 1012, no albumin or excess of phosphates; quantity twenty-four hours, 4 pints.

November 8, 1915, was called to visit patient and found her confined to bed, and learned attacks had increased in frequency, though most of them were of the petit mal type.

Patient placed on mercury and iodid and the attacks held in check by the use of ascending doses of bromid of calcium, fortified with Fowler's solution of arsenic until it caused a disfiguring acne of the face and back, when it was replaced by brometone. Patient made but slow progress; the legs later becoming edematous without apparent cause other than debility, but gradually disappeared in a few weeks under the use of diuretics, which caused the urinary output to increase to 4 quarts in twenty-four hours.

Was confined to house until May 18, when she called at the office, though having a petit mal attack almost daily.

As attacks decreased in number, she began having attacks of violent temper to which she was unaccustomed, and which she recognized and deplored but could not control.

No attacks from June 23, 1916, to January 24, 1917, though she was taking only four capsules of brometone a day to control the attacks, but had received large doses of iodid and mercury either concurrently or alternately.

May 24, 1917. Returned on account of a mild attack and stated that, believing she had recovered, she had discontinued treatment after her last visit in January.

September 14, 1917. Reports attack August 24, the day prior to menstruating—the first period for eighteen months. Placed on iodid, mercury and four capsules brometone daily.

January 17, 1918. No attacks; blood Wassermann, negative, but antiluetic treatment continued.

February 6. No attacks; thyroid enlarged, pulse 78.

March 19, 1918. No attacks.

November 19. Returns on account of grand mal attack, November 3. Had again discontinued treatment believing she had recovered. Objective examination: negative, save thyroid slightly enlarged and knee jerks considerably exaggerated.

A short time after the above visit the patient contracted influenzal pneumonia from which, her physician reported, she died a few days thereafter.

It will be noted that clinically these two cases appear identical save for recurrences in the latter case which evidently were due to discontinuing constitutional treatment, yet the former gave a four plus Wassermann reaction of the serum, while the latter was negative, though it is true, the blood test was made after the patient had taken the iodide and mercury, the latter of which, however, had been discontinued some time prior to the examination.

Though some of my cases of epilepsy have shown only a two plus Wassermann and a few but a one plus reaction, I am treating them as though specific in origin with encouraging results, though it is too early to record conclusions.

Those giving a one plus Wassermann have been almost entirely children or women in whom I had reason to believe that if syphilis were present at all it was hereditary.

While unprepared at this time to give data, I am able to state that in my experience of the past several years the proportion of epileptics giving a Wassermann reaction in some degree is much greater than that given in available statistics, and I feel confident that the laboratory has not detected all cases in which syphilis was, either directly or indirectly, an etiological factor.

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THE LIBIDO.

By

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ORIGINALLY taken from the sexual sphere, this word has become the most frequent technical expression of psychoanalysis, for the simple reason that its significance is wide enough to cover all the unknown and countless manifestations of the will. It is sufficiently comprehensive and rich in meaning to characterize the real nature of the psychical entity which it includes. The exact classical significance of the word libido qualifies it as an entirely appropriate term. The meaning of libido in Cicero is "to wish," "it pleases me," "gladly, willingly." The conception of the libido in Mythology is the driving strength of our soul, and whose nature it is to allow the useful and injurious, the good and the bad, to proceed. The term libido is conceived by Freud in the original narrow sense of sexual impulse, sexual need. Experience forces us to the assumption of a capacity for displacement of the libido, because functions or localizations of non-sexual force are undoubtedly capable of taking up a certain amount of libidinous afflux. Functions or objects could, therefore, obtain sexual value, which under normal circumstances really have nothing to do with sexuality. From this fact results the Freudian comparison of the libido with a stream which is divisible, which can be dammed up, which overflows into branches. and so on. Freud's original conception does not interpret "everything sexual," although this has been asserted by critics, but recognizes the existence of certain forces, the nature of which are not well known; to which Freud, however, compelled by the notorious facts which are evident to any layman, grants the capacity to receive "affluxes of libido." The hypothetical idea at the basis is the symbol of the "Triebbündel" (bundle of impulses), wherein the sexual impulse figures as a partial impulse of the whole system, and its encroachment into, the other realm of impulse is a fact of experience. The theory of Freud, branching off from this interpretation, according to which the motor forces of a neurotic system correspond precisely to their libidinous additions to other (non-sexual) functional impulses, has been sufficiently proven as correct, it seems to me, by the work of Freud and his school.

Since the appearance of the "Three Contributions" in 1905, a change has taken place in the libido conception; its field of application has been widened. It was paranoia, so closely related to dementia praecox, which seemed to compel Freud to enlarge the earlier limits of the conception. He qustions whether the well-known longing for reality, of the paranoic dement (and the dementia praecox patients) is to be traced back to the withdrawal of the "libidinous affluxes" alone, or whether this coincides with the so-called objective interest in general. It is hardly to be assumed that the normal is maintained only through affluxes of libido or erotic interest. The fact is that in very many cases reality disappears entirely, so that not a trace of psychological adaptation or orientation can be recognized. Reality is repressed under these circumstances and replaced by the contents of the complex. One must of necessity say that not only the erotic interest but the interest in general has disappeared, that is to say, the whole adaptation to reality has ceased. To this category belong the stuporous and catatonic automatons. In the territory of the neuroses, hysteria and compulsion neuroses in particular, it is mainly a question whether any portion of the libido which is spared through the specific repression becomes introverted and regressive

into earlier paths of transference; for example, the path of the parental transference. With that, however, the former non-sexual psychologic adaptation to the environment remains preserved so far as it does not concern the erotic and its secondary positions. The reality which is lacking to the patients is just that portion of the libido to be found in the neurosis. In dementia praecox, on the contrary, not merely that portion of the libido which is saved in the well-known specific sexual repression is lacking for reality, but much more than one could write down to the account of sexuality in a strict sense. The function of reality is lacking to such a degree that even the motive power must be encroached upon in the loss. The sexual character of this must be disputed absolutely, for reality is not understood to be a sexual function. Moreover, if that were so, the introversion of the libido in the strict sense must have as a result a loss of reality in the neuroses, and, indeed, a loss which could be compared with that of dementia praecox. For a long time the theory of libido to dementia praecox seemed inapplicable. With the appearance of the "Three Contributions" there gradually grew up a genetic definition of the libido, which rendered it possible to replace the expression "psychic energy" by the term "libido." It is still a very important question whether phylogenetically the function of reality is not, at least in great part, of sexual origin. To answer this question directly in regard to the function of reality is not possible, but we shall attempt to come to an understanding indirectly.

A fleeting glance at the history of evolution is sufficient to teach us that countless complicated functions to which today must be denied any sexual character were originally pure derivations from the general impulse of propagation. During the ascent through the animal kingdom an important displacement in the fundamentals of the procreative instinct has taken place. The mass of the reproductive products with the uncertainty of fertilization has more and more been replaced by a controlled impregnation and an effective protection of the offspring. In this way part of the energy required in the production of eggs and sperma has been transposed into the creation of mechanisms for allurement and for protection of the young. Thus we discover the first instincts of art in animals used in the service of the impulse of creation, and limited to the breeding season. The original sexual character of these biological institutions became lost in their organic fixation and functional independence. Even if there can be no doubt about the sexual origin of music, still it would be a poor, unaesthetic generalization if one were to include music in the category of sexuality. It can be a surprise only to those to whom the history of evolution is unknown to find how few things there really are in human life which cannot be reduced in the last analysis to the instinct of procreation. It includes very nearly everything, I think, which is beloved and dear to us. We spoke just now of libido as the creative impulse and at the same time we allied ourselves with the conception which opposes libido to hunger. In nature this artificial distinction does not exist. Here we see only a continuous life impulse, a will to live which will attain the creation of the whole species through the preservation of the individual. Thus far this conception coincides with the idea of the Will, for we can conceive will objectively only, as a manifestation of an internal desire. This throwing of psychological perceptions into material reality is characterized philosophically as "introjection."

In the diversity of natural phenomena we see the desire, the libido in the most diverse applications and forms. We see the libido in the stage of childhood almost wholly occupied in the instinct of nutrition, which takes care of the upbuilding of the body. With the development of the body there are successively opened new spheres of application for the libido. The last sphere of application, and surpassing all the others in its functional significance, is sexuality, which seems at first almost bound up with the function of nutrition. In the territory of sexuality the libido wins that formation, the enormous importance of which has justified us in the use of the term libido in general. Here the libido appears very properly as an impulse of procreation, and

almost in the form of an undifferentiated sexual primal libido, as an energy of growth, which clearly forces the individual towards division, budding.

From that sexual primal libido which produced millions of eggs and seeds from one small creature derivatives have been developed with the great limitation of the fecundity; derivatives in which the functions are maintained by a special differentiated libido. This differentiated libido is henceforth desexualized because it is dissociated from its original function of egg and sperma production; nor is there any possibility of restoring it to its original function. Thus, in general, the process of development consists in an increasing transformation of the primal libido which only produced products of generation to the secondary functions of allurement and protection of the young. This now presupposes a very different and very complicated relation to reality a true function of reality, which functionally inseparable is bound up with the needs of procreation. Thus the altered mode of procreation carries with it as a correlate a correspondingly heightened adaptation to reality.

In this way we attain an insight into certain primitive conditions of the function of reality. It would be radically wrong to say that its compelling power is a sexual one. It was a sexual one to a large extent. The process of transformation of the primal libido into secondary impulses always took place in the form of affluxes of sexual libido, that is to say, sexuality became deflected from its original destination and a portion of it turned, little by little, increasing in amount, into the phylogenetic impulse of the mechanisms of allurement and of protection of the young. This diversion of the sexual libido from the sexual territory into associated functions is still taking place. Where this operation succeeds without injury to the adaptation of the individual it is called Sublimation. Where the attempt does not succeed it is called Repression.

With this alteration in the libido conception, certain parts of our terminology need revision as well. As we know, Abraham has undertaken the experiment of transferring the Freudian libido theory to dementia praecox and has conceived the characteristic lack of rapport and the cessation of the function of reality as autoerotism. This conception needs revision. Hysterical introversion of the libido leads to autoerotism, since the patient's erotic afflux of libido designed for the function of adaptation is introverted, whereby his ego is occupied by the corresponding amount of erotic libido. The schizophrenic, however, shuns reality far more than merely the erotic afflux would account for; therefore, his inner condition is very different from that of the hysteric. He is more than autoerotic, he builds up an intrapsychic equivalent for reality for which purpose he has necessarily to employ other dynamics than that afforded by the erotic afflux. Therefore, it must be granted to Bleuler the right to reject the conception of autoerotism, taken from the study of hysterical neuroses, and there legitimate, and to replace it by the conception of autismus. This last term is better fitted to facts than autoerotism.

From these considerations it follows necessarily that the descriptive psychologic conception of libido must be given up in order for the libido theory to be applied to dementia praecox. That it is there applicable is best shown in Freud's brilliant investigation of phantasies. The question now is whether this genetic conception of libido proposed by Jung is suitable for the neuroses. This question may be answered affirmatively. It is not merely to be expected but it is also probable that at least temporary functional disturbances of various degrees appear in the neuroses, which transcend the boundaries of the immediate sexual; in any case, this occurs in psychotic episodes. The broadening of the conception of libido which has developed through the most recent analytic work as a real advance which will prove of especial advantage in the important field of the introversion psychoses. In the transference neurosis (hysterical) where merely a part of the immediate sexual libido is taken away from reality by the specific sexual repression, the substituted product is a phantasy of individual origin and significance with only a trace of those archaic traits found in the phantasies of those

mental disorders in which a portion of the general human function of reality organized since antiquity has broken off.

As has already been shown above, the libido in youthful individuals at first manifests itself in the nutritional zone, when food is taken in the act of suckling with rhythmic movements and with every sign of satisfaction. With the growth of the individual and the development of his organs the libido creates for itself new avenues to supply its need of activity and satisfaction. The primary model of rhythmic activity producing pleasure and satisfaction must now be transferred to the zone of other functions, with sexuality as its final goal. A considerable part of the "hunger libido" is transferred into the "sexual libido." This transition does not take place suddenly at the time of puberty, as is generally supposed, but very gradually in the case of the greater part of childhood. The libido can free itself only with difficulty and very slowly from that which is peculiar to the function of nutrition, in order to enter into the peculiarity of the sexual function. Two periods are to be distinguished in this state of transition—the epoch of suckling and the epoch of the displaced rhythmic activity. Suckling still belongs to the function of nutrition, but passes beyond it, however, in that it is no longer the function of nutrition, but rhythmic activity, with pleasure and satisfaction as a goal, without the taking of nourishment. Here the hand enters as an auxiliary organ. In the period of displaced rhythmic activity the hand appears still more clearly as an auxiliary organ; the gaining of pleasure leaves the mouth zone and turns to other regions. The possibilities are now many. As a rule, other openings of the body become the objects of the libido interest; then the skin and special portions of that. The activity expressed in these parts, which can appear as rubbing, boring, picking and so on follows a certain rhythm and seems to produce pleasure. After longer or shorter tarryings of the libido at these stations, it passes onward until it reaches the sexual zone, and there, for the first time, can be occasion for the beginning of onanistic attempts. In its migration the libido takes more than a little of the function of nutrition with it into the sexual zone, which readily accounts for the numerous and innate correlations between the functions of nutrition and sexuality. If, after the occupation of the sexual zone, an obstacle arises against the present form of application of the libido, then there occurs, according to the well-known laws, a regression to the nearest station lying behind, to the two above mentioned periods. It is now of special importance that the epoch of the displaced rhythmic activity coincides in a general way with the time of the development of the mind and of speech. The period from birth until the occupation of the sexual zone might be designated as the presexual stage of development. This generally occurs between the third and fifth year, and is comparable to the chrysalis stage in butterflies. It is distinguished by the irregular commingling of the elements of nutrition and of sexual functions. Certain regressions follow directly back to the presexual stage, and, judging from my experience, this seems to be the rule in the regression of dementia praecox.

These regressive phenomena show that even from the distance of the modern mind those early stages of the libido can be regressively reached. One may assume, therefore, that in the earliest states of human development this road was much more easily travelled than it is today. Here let us concern ourselves only with the problem of the transition of the libido. The transition takes place, as has been repeatedly suggested, by means of shifting to an analogy. The libido is taken away from its proper place and transferred to another substratum.

The resistance against sexuality aims, therefore, at preventing the sexual act; it also seeks to crowd the libido away from the sexual function. We see, for example, in hysteria, how the specific repression blocks the real path of transference, therefore, the libido is obliged to take another path, and that an earlier one, namely, the incestuous road which ultimately leads to the parents. Let us speak, however, of the incest prohibition, which hindered the very first sexual transference. Then the situation

changes in so far that no earlier way of transference is left, except that of the presexual stage of development, where the libido was still partly in the function of nutrition. By a regression to the presexual material the libido becomes quasi desexualized. But as the incest prohibition signifies only a temporary and conditional restriction of sexuality, thus only that part of the libido which is best designated as the incestuous component is now pushed back to the presexual stage. The repression therefore concerns only that part of the sexual libido which wishes to fix itself permanently upon the parents. The sexual libido is only withdrawn from the incestuous component, repressed upon the presexual stage, and there, if the operation is successful desexualized, by which this amount of libido is prepared for an asexual application. However, it is to be assumed that this operation is accomplished only with difficulty, because the incestuous libido, so to speak, must be artificially separated from the sexual libido, with which for ages, through the whole animal kingdom, it was indistinguishably united. The regression of the incestuous component must therefore take place, not only with great difficulty, but also carry with it into the presexual stage a considerable sexual character. The consequence of this is that the resulting phenomena although stamped with the character of the sexual act, are, nevertheless, not really sexual acts de facto; they are derived from the presexual stage, and are maintained by the repressed sexual libido, therefore possess a double significance. The presexual stage is characterized by countless possibilities of application, because the libido has not yet formed definite localizations. It therefore appears intelligible that an amount of libido which reaches this stage through regression is confronted with manifold possibilities of application. Above all it is met with the possibility of a purely onanistic activity. But as the matter in question in the regressive component of libido is sexual libido, the ultimate object of which is propagation, therefore it goes to the external object (parents). It will also introvert with this destination as its essential character. The result, therefore, is that the purely onanistic activity turns out to be insufficient and another object must be sought for, which takes the place of the incest object. The nurturing mother earth represents the ideal example of such an object. The psychology of the presexual stage contributes the nutrition component; the sexual libido, the coitus idea. From this the ancient symbols of agriculture arise. In the work of agriculture, hunger and incest intermingle.

The course of the libido, as we may conclude from these studies, originally proceeded in a similar manner as in the child, only in a reversed sequence. The sexual act was pushed out of its proper zone and was transferred into the analogous mouth zone—the mouth receiving the significance of the female genitals, the hand and the fingers, respectively, receiving the phallic meaning. In this manner the regressively reoccupied activity of the presexual stage is invested with the sexual significance, which, indeed, it already possessed in part before, but in a wholly different sense. Certain functions of the presexual stage are found to be permanently suitable and therefore are retained later on as sexual functions. Thus, for example, the mouth zone is retained as of erotic importance, meaning that its valuation is permanently fixed. Concerning the mouth, we know that it also has a sexual meaning among animals inasmuch as, for example, stallions bite mares in the sexual act; also cats, cocks, etc. A second significance of the mouth is as an instrument of speech, it serves essentially in the production of the mating call, which mostly represents the developed tones of the animal kingdom. As to the hand, we know that it has the important significance of the contrectation organ.

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ELECTRO-THERAPEUTICS AS SUGGESTIVE THERAPY.*

By

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THE physical value of electro-therapeutics is a matter which is still in debate. Much research must be gone through before the medical profession in general is convinced that the application of electricity has an actual metabolic influence. The average practitioner who does not himself make use of electro-therapeutics is of the opinion that whatever cures are ascribed to this method of treatment are, in all probability, to be attributed to a psychic rather than a physical influence. Under such circumstances he is likely to think of the entire method, both in its physical and its psychical aspect, as unscientific; that is to say, inexact, uncertain, experimental. Probably he would agree that it need not remain so forever, that careful codification of the results attained by the method of treatment ranging over a number of years may place electro-therapeutics on a level with the more exactly ascertained branches of medical science. If he is open-minded he would probably assert no more than that the treatment is still young and has not yet attained scientific exactness.

It is no part of the purpose of this paper to argue either for or against the scientific status of electro-therapeutics, or even to make any assertion or expression of opinion in regard to it. Let the physical value of electric treatment be what it may, great or small, there is most certainly in this method of treatment a wide range for the application of suggestive therapy, and it is of this phase of the subject that I wish to speak.

It is no easy matter to define just what is meant by the term "suggestive therapy," but perhaps I may assume that the meaning is already sufficiently well known. Suggestive therapy tries to produce a physical effect by the psychic route, tries to influence the body by indirection, through the mind. There is no need to argue here concerning the vast influence which the mind exerts upon the body, for this is a matter of common consent. Every one agrees that physical changes are constantly being produced through and by psychic changes. The question is, then, how to control these psychic changes in such a way as to direct them toward the physical changes which are desired.

As a first step toward the understanding of this it may be well to review some very familiar matters of brain physiology and function. As we know, the brain may be divided into anterior and posterior parts. In front of the Fissure of Rolando lies the mortor area, and the functions of this area are thought, on good evidence, to be for the most part unconscious. That part of the brain which lies behind the Fissure of Rolando, on the other hand, has functions which are thought to be for the most part conscious. It is in this portion, the post-pallium, that the registrations of the senses are made and interpreted. The pre-pallium, or anterior portion, controls motor output.

Now, the important point in all this, for our present purpose, is that the motor areas of the brain are controlled by the sensory areas, the unconscious by the conscious. Speech, for example, does not have its ultimate origin in Broca's convolution, as is so

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often asserted, but rather from the posterior part of the brain—the sensory. All the conscious phases of speech production, such as lip movements, voice control, visual imagery, return for their source to the sensory areas. Now suggestive therapy is nothing but a means of affecting the sensorium in such a way as to effect that unconscious part of the brain which it controls—the motor.

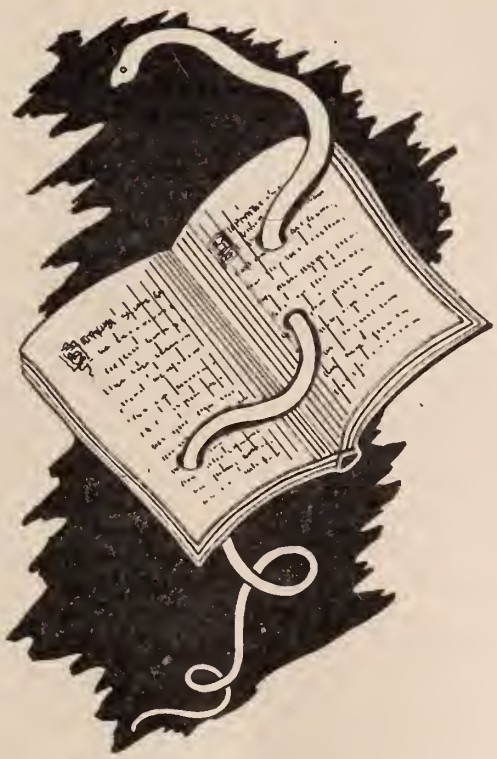
The means which are adopted for this purpose should, of course, be as powerful and compelling, within reason, as possible. Probably religion and the ideas connected with it form the most powerful suggestive agents known. These have been used, as all are aware, from time immemorial in suggestive therapy. They are in very active use today among Christian Scientists. The wise physician uses his own personality for all it is worth in the way of suggestive therapy. If his personality is particularly powerful or if his reputation is very great he may make cures on these things alone, without giving any other treatment whatever.

In short, the mind of the patient will be properly impressed only by a thing or an idea which is in itself impressive. And it is absolutely necessary to suggestive therapy that the patient's mind be impressed—that it be filled with confidence in some power to work the desired cure. Without this confidence nothing can be done, and this confidence can be gained only by an impressive thing. I have myself been working for some time toward a cure of stuttering by the methods of suggestive therapy. I give much attention to psychological backgrounds in my treatment of stuttering, and I exact of my patients long and regular drill. I believe, however, that the cures which I have made have been due less to the psychological analysis and less to the drill than to the persistent installation of suggested ideas which has been my main purpose. I have seen to it that the drill has been *impressive*, that the psychological analysis has been such as to *inspire confidence*, and I am modest enough to believe that my success has been due chiefly to this. I certainly do not mean to imply that *any* sort of drill and any sort of psychological analysis which my patients could have been brought to believe in for the time being would have been as effective as the drill and the analysis which they have been given. I do not imply that any element of untruth should enter into the matter. But I do assert that the ideas which are suggested and the means employed for the suggesting of them should be made impressive in themselves, in order that they may inspire the necessary confidence. Another element in my success with stutterers has certainly been the fact that the drill of which I speak lasts for a considerable time. This sort of treatment seems to require a long time exposure, and those patients who do not remain long enough under it get little benefit.

To speak, now, more direcly on the subject of the present paper, let me ask whether there is anything, except religion, which could possibly have a greater impressive value than the mysterious power which we know as electricity. Its capabilities, which have been so variously developed within a very few years, seem to us almost unlimited. If electricity can carry a message hundreds of miles under sea or through the air, if it can be made to drive a train of cars or to light a city, why may it not do almost anything conceivable in the human body? So the patient may think, or may easily be *brought* to think. And this is suggestive therapy. Because he thinks so, it is so. Because of the high suggestive potency of electricity, a thing which has captured even the dullest imaginations, it has a high therapeutical value, even though it should be demonstrated that it produces no permanent physical changes whatsoever. Once the proper degree of confidence has been established in the patient's mind, the only thing needful in time—length of treatment.

Before this or any other sort of suggestive therapy is begun the practitioner must determine with all possible certainty that there is no organic trouble at the root of the complaint. For, of course, no honest and intelligent man would attempt to treat organic disease by any such method. When one is sure that the difficulty is merely

functional, however, he may proceed with the electric treatment without the slightest hesitation, provided that he considers it primarily as a means to suggestive therapy. It may very well be that the science will soon establish beyond a peradventure the actual value of electricity as an inducer of metabolic change. This will be an added advantage. Meanwhile, when intelligently employed, it cannot be physically dangerous, and it may do much good.



A FEW REMARKS ON SEX AND LIFE.

By

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"Society is full of mines; be careful not to strike one. You may cause an explosion and be blown up yourself. You can never take too many precautions to avoid such a catastrophe."

"HUMAN desires are the motive powers of all men. They cause all the good and all the bad we see around us. They have the greatest sway over the intelligence and the will," says Rochefoucald, "egotism, self-esteem, is the sole instigator of the fundamental human passions. Envy and jealousy spring from them—there are no worse enemies than they, sly and crafty, whom one must be careful not to offend."

These qualities and many more added thereto constitute character and according to the groupings of these qualities personalities are formed. And yet not only these groupings but also the qualities themselves are oftentimes off-shoots or sprouts from parental influence poorly pruned.

The greatness of a man does not so much depend on his strength, upon his physical ability, etc., as upon those human qualities indicating strength of will, strength of courage, strength of honesty, strength of love and so forth.

Should one analyze such a quality as "will" it will be found that to have the fullest action of the will it requires a complete unhindered deliberation in a strong personality without conflicting ideas or thoughts. So that courage, honesty, love and so forth, probably are a part of the strength of will.

When this weakens, so to speak, again distinct groupings of qualities occur, self-consciousness, timidity, shame, self-deceit and so on, which are usually indicators of an attempt to avoid self-preservation.

Self-preservation is maintained by preservation of species and preservation of species is upheld by sexual reproduction. Hence its great importance in human life. To feel and think that the sexual life does not begin until the age of 13 or 14, is a misapprehension, for sexual life begins with the advent of birth, nay, possibly before birth, and where the old proverb says he is a "chip of the old block" one might change it to read "A chip off the whole block."

This modern idea in favor of sexual enlightenment must be viewed from two standpoints, first, the endeavor to make known the seriousness and far-reaching effect of venereal disease and, secondly, to prevent certain forms of mental and nervous difficulties which bear a close relation to suppression, inversion and distortion of sexual instincts and cravings.

When one considers the enormous importance and repeated frequency with which these processes occur in a child, one cannot but be astounded at the manner in which this phase of the subject has been ignored by the psychologist, the educator, and the teacher. Has it been a false notion of morality? Has it been a sacred reality too holy for discussion?

Whether it be either the former or the latter, it is conducive to the creation of those mental feelings such as shame, disgust, prudishness, etc., which merely drive the child further into the mysticism of the difficulty and deceive him in an actual physiological phenomenon.

Of course, it may be that the power of the educator is limited not merely by the child's tendencies or disposition but also by the very nature of its environment. The great difference between the mind of an animal and the mind of a man, woman or child is the latter is the mind of an animal plus intelligence which branches out from schooling, religion, conventionalities, customs, etc. Remove all these additional states of mind and you have again an animal. This is seen in idiocy and the decay of mental disease processes, where merely animal and vegetative existence close the life of the individual.

Among these additional factors, intelligence, judgment, ethical and moral sense, there exists as a response to these acquirements, a stimulus which has its exciting cause, sex feelings. Sex feelings occur in all life, animal, insect, vegetable, and so on. It may not be misleading to say that much of our intelligence, our judgment, our ethical, our moral sense bears a close relation to an adjustment to these feelings.

Notwithstanding this network of apparent props, parental influence, environmental factors, personal observations, judgment, decision between right and wrong and other such factors which enter into whether this should or should not be done, thought or acted out, the child from a very early age may often decide for himself, for he soon begins to realize much of life is quite different from the manner in which it is given to him. From the very beginning he wants some sort of a theory for the creation and disappearance of things, living things, especially, and when this theory is not supplied, do not think for a minute that he drops it; no, he formulates one for himself and many of his childhood sex acts will be based upon his own formulation. He has observative powers and quietly takes in things about him both in the home, on the farm and elsewhere and from these observations he builds his theory of reproduction and destruction. Many times he will get hints from his parents without the parents realizing it at all.

One thus notices that the child's sex life begins with two false steps, the one that of deceiving and falsifying with a fabulous story of the theory of the origin of babies and the forcing of such actions as exposure and nakedness into the realm of immorality and that the reproductive organs are unclean and that certain actions are shameful.

This does what? It splits the body and the mental life into two parts, one which is quite clean and one quite outside the sphere of immorality and to which shame, disgust and prudishness have no apparent attachment. It is here our child obtains the keynote to his future sexual life, for by avoiding that part of his body which is recognized as unclean and suppressing that which is true he exists as an individual bodily clean and mentally fit to all appearances and yet this is the beginning of future larger splittings, dissociations of personality, social conflicts, business failures, fabrications, mental disorders, dishonesty and pathological liars.

These same parental forces which treat the reproductive theory falsely and emphasize the body distinctions must not overlook the fact that the child might turn such theories around and recognize uncleanliness in his parents to whom his existence he holds himself responsible. This naturally will produce a conflict in the mind of a child, and when proper mental adjustment is rendered impossible, disorders in conduct such as stubbornness, irritability, refusal to obey and wilfulness, may develop or disturbances in personality with the development of secretiveness, reticence, refusal to maintain a confidant, introspection, self-observation and stolidity, may occur. Outside of the home these children act much differently, as a rule, especially those with conduct disorders and do so because they are able to ride with the current and meet less of the barriers of custom and conventionality.

The disturbance in personality, however, continues to meet with resistance through ignorant companions, servants and quack literature, thus increasing the "don'ts" or "shouldn'ts" because too much of this will make you insane or too much of that will weaken your brain.

It should be kept in mind that many children adjust themselves at either an earlier

or a later age. It is only those who are unable to adjust themselves that prevention through mental and physical hygiene is paramount and where mistakes in judgment as to whether one will adjust himself or not may be many, one would not assume a passive attitude and leave the child to "live its own life."

The sex life up to approaching manhood and womanhood is concerned with organic and functional processes, the function of eating, breathing, sweating, bathing, urination, etc. But when puberty arrives a complete new picture of life is made and one's sexual nature becomes a much deeper thing. Our sexual nature, then, becomes intimately connected with social life, we choose our society, our chums, our vocation, etc., according to this adaptation we adjust ourselves in this world while others get nowhere, become a drag upon the home and society and finally end up in an institution or a home.

The dangers of those poorly adjusted, however, are many and for that reason alone corrective educational measures should be instituted. Stuart Mills states, "The diseases of society can be no more checked or healed than those of the body without publicly speaking of them." One cannot ignore or deny the existence of the habit disorder unless it is through honest ignorance which by far is only a form of self-deception.

The child should not be allowed to develop the notion or idea that its sexual parts and functions are any different in nature and function from any other part of the body, thus preventing him from developing one mental attitude for one part of his body and another attitude for the rest of his body. One should develop the subject both objectively and subjectively. Objectively by showing how the processes in one's life including the sexual are related to the processes of nature, not only in the rest of the animal kingdom and plant life but also in all phenomena of the universe as seen in the constant never-ending cycle of creation and destruction, birth and death, growth and decay, rising and setting and ebb and flow. With this should go the development and display of secondary sex characters which will tend to draw one's attention away from the primary sex parts.

On the subjective side belong those processes which have to do with the individual, the good and bad effects, the dangers of faulty mental and physical habits, excesses, pregnancy, venereal disease and so on.

One should not take one particular phase and attempt to correct that without readjusting the whole life. To teach the harmful effect of self-abuse without giving a full account of the physiological process may only cause a transference of habit disorder from probably the physical to the mental and only result in a future "nervousness" or neurosis.

What one wishes to bring about is not so much a limitation in the sexual intellectual growth of the child as to promote such factors as will raise the general culture of society. It is surprising how often one meets a grown-up who believes that every egg laid by a hen will develop into a chicken if laid down by the hen. There are persons who know nothing about the difference between a cow, bull and an ox and are ignorant as to whether members of the various animal kingdoms are reproduced by eggs or living beings.

Distinctly apart from these demands of social culture there are many other reasons why sexual enlightenment is worthy. These are more necessary for the mental and physical health of the individual and include those excesses in habit formation which through mental inadaptability rouse up mental difficulties which are so many times erroneously attributed to the previous faulty habit.

The meaning and possible dangers of self-abuse, excesses in illigitimate relations and the complications which might occur thereto, must be emphasized in bringing a subject of this type to the mind of a child. Where it might be possible to offer much in regard to the meaning of self-abuse only those factors which have to do with future life of the individual will be discussed. One must first banish from their minds the

popular and exaggerated idea received from popular fiction and the "medicine book," which is a part of the armament of most homes, that masturbation leads to insanity or imbecility and that nightly discharges are weakening and vicious to the mind and body. Such is quite far beyond the actual fact; masturbation does not lead to insanity or imbecility. Nocturnal emissions are not weakening or vicious in any way to the mind and body *per se*. But, the attitude assumed by that individual towards the act or action might tend to dissociate and poorly adjust him to his surroundings so that mental disturbances might develop.

For example, a boy is in the habit of masturbating; he began early, having been shown in early age either at school, on the street or elsewhere. Most of the habits are formed between six to twelve, during which period the child is also observing his parents, and other such actions as appear to bear a relation to him. He knows nothing about its physiological action, nothing about its cause or effect and at a later time, at 13, 14 or 15, he beholds the fact that it will discharge itself and now being in grammar school and taught to use dictionaries and so on, he seeks the reason for this peculiar process. He soon finds, either in a book or by hearsay from older men, usually laborers who use these same terms in a joking manner and attribute physical states to such habits and concludes that it is weakening, that he is not well, that he did wrong, that he is losing vital substances. He then develops a sense of wrong-doing, consequently suffers from self-reproach, fears injury to his health and may develop nervous symptoms of various sorts. These symptoms may arise many years after the cessation of the habit due to the fact that a temporary adjustment has taken place which breaks down under a new environment, such as an engagement period, a true love affair, a prolonged period of mental restraint such as a change in social level, and so forth.

The struggle between what is considered right, pure and honorable and the physiological or mental "call" for the gratification of feelings is many times met by laziness, lassitude and a sense of inadequacy in meeting the ordinary burdens of life. These individuals carry their self-reproach and condemnation further, they begin to avoid people, for fear these people will notice their physical disabilities and surmise their troubles. They make attempts at fornication and are surprised at their lack of ability, again forcing them further and further into a state of sadness, for they assume that relations are lost, that a future marriage is beyond reach; that disease will make itself manifest. What can be more pitiable than such a man seeking mental relief and nowhere is more tact needed by a physician than in meeting these individuals. Physicians themselves do harm to these people by forgetting first that their patients are ignorant and secondly that their patient desires help and no criticism. The appearance of an emission in a boy, a first menstrual period in a girl, of the recognition of breast enlargement or appearance of hair on various parts of the body often creates intense excitement in boys and girls and although they may be of an age to recognize what all this means from the street or school, it is surprising how many hear or know nothing about such things. This may call for self-observation, self-study, introspection and with the development of religious education with "Thou shalt not" conflicts take place, trends develop, attempts at sublimation, such as flying into religion, philosophy and other deep subjects, occur with probable later development of a progressive incurable mental disease.

Or it may be the advent of the display of the body, scrupulosity in regard to dress, hair, teeth; excessive desire for dancing, sports and games where contact with the body of a contestant or partner is possible. Situations which call for courage or a fighting spirit so that he can test himself even to the extent of illicit relations.

With the beginning of illicit relations the problem of venereal disease and its effect upon the body both early and late becomes manifest. The effect of these diseases upon wife and offspring and the indirect effect possibly in quantity and quality of work are

often present in the mind. One also treads upon that tender problem of illegitimate pregnancies, forced marriages, which so often result in unhappiness and defective or neurotic children and the scores of other manifestations closely related to untrained minds, ignorant of possibilities, thus making the "fall" easy for both male and female. The old proverb "ignorance is bliss, it is folly to be wise," rather falls outside of the scope of sexual enlightenment. These later problems, venereal disease, illicit intercourse, extra-marital pregnacies, are not only effective upon the health of the parties concerned but also bear close relation to the social and economic conditions of the community. It has been only rare exceptions that women have maintained their social level or men their business height when these actions have become manifest to the community. Decline has been most marked; the woman, into prostitution and debauchery; the man, into alcoholism and probably perversions.

To enlighten one upon sexual matters does not merely mean to cause the party concerned to become aware of what sexuality means, but that the individual must also cause that awareness to become a part of him or herself.

How many girls marry without the slightest information regarding sex? How many are totally unaware of possibilities after marriage, a childless marriage, venereal infection and operations as a result of same, and the innumerable other marital difficulties?

It only seems proper, therefore, to emphasize the value of the meaning of sexuality, subjectively and objectively. To begin with, the child needs a dignified usable vocabulary. If one intends to bring sexuality out of the sphere of obscurity one must rescue the sex words from the street slang and vulgar talk. This may be difficult, but it must be considered.

The one to whom the work of enlightening the children falls should be someone who can enjoy the child's confidence and possess the faculty of really understanding children. Every child will be a different problem, the same method of approach and mode of advance will vary with each child; any sexual phenomena, such as an emission or a menstrual flow, does not always indicate the beginning of psychosexuality, it may have begun much earlier. Sexual imagination in a child is great and very often deceives even the expert, hence the necessity of the best possible mode of attack. Merely to be able to discuss the physiology does not meet with results unless it can be applied in that individual case. The child must be studied and observed before enlightenment begins. Certain facts must be gained at home. At no time should the examiner allow the child to feel that he, the examiner, does not believe that the child has told him the truth, for he soon meets with the same difficulties he has met with before, deceit and falsification.

Thus one can see the importance of sexual enlightenment. Those who are guided by the theory that sexuality is no different than the phenomenon connected with other processes, such as hunger, thirst, smell, etc., will find the enlightenment of their children an easy matter and the veil of impropriety lifted without lowering the level.

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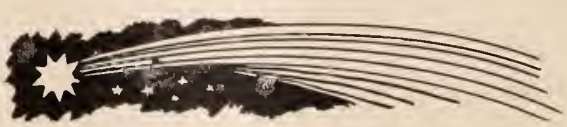


THE CRISIS IN PSYCHOPATHOLGY.

By

MEYER SOLOMON, M. D., Chicago.

AS I see the situation, we are face to face with a crisis or turning point in the field of psychopathology. If the turning point steers us along the proper pathway, all is well. And, if I sense the signs of the times in psychopathology aright, I believe that we are, after all, bound in the right direction, and so the crisis may be faced by us with equanimity and satisfaction.

I do not wish to minimize the importance of the Freudian movement. On the other hand, it is because I clearly recognize its real significance that I have chosen for this paper the title which it bears. The Freudian movement, although it has conferred upon us many benefits, direct and indirect, did, nevertheless, so it seems to me, bring out in decided prominence a certain very objectional tendency which one can note in so much of the writing of adherents of that school. This applies to Freud, Jung, Adler and their respective followers abroad and here in America. The objectionable trait to which I refer is to be found in the tendency to uncritical thinking and writing. This has of necessity led to one-sided thinking, erroneous and extravagant statements, groundless assertions, distortion of some of the simple facts of life the truth of which can be had for the mere looking or asking, one might say.

It is this tendency toward uncritical thinking and writing which is responsible for most of the trouble which we have had in this connection. Uncritical thinking led to erroneous conclusions. To prove the truth of false conclusions, further distortion of facts more uncritical thinking had to follow in its wake. This led to the adoption of sensational and unbelievable standpoints. Credulity and dogmatism with disregard of other scientific work along the same line and of work previously done, of knowledge already acquired by hard thinking on the part of others was in order.

Once this was begun there seemed to be no end of it in sight. A vicious circle of thinking was established. Suggestibility and imitation did their share in bringing about a sort of epidemic of loose thinking in this field. The condition became contagious and lucky was he who held his feet firmly to the ground and refused to be swept off his feet by the cyclone of uncritical and analogical thinking.

Fortunately, even those who were in the movement, who had for a time been swept along by the hurricane, eventually realized that they had lost their foothold in reality and so we find two off-shoots of the original Freudian school; one, headed by Jung and the other by Adler. Both of these men endeavored to broaden out the Freudian viewpoints, but, unfortunately, they, too, fell into the same trap of uncritical thinking, and applied the same methods to their modified views. In truth, each of these writers built up what may properly be called systems. Systems of thought, to be sure, are not necessarily *non desideratum*. Where such systems are based on fact, on truth, all of us should be willing to follow their teachings. But where the system is false, where the premises are at fault, where the thinking is based on hasty assumption, then we are being led up blind alleys.

Now, we know full well that with the advent and spread of Freudism and its offshoots there was a distinct danger that such thinking might get too many psychopathol-

ogists in its grip and hold them bound for too long a time. The break in the Freudian column, however, has done much to bring about a collapse of the extreme wing of these advancing phalanxes. Jung and Adler have done the Freudian movement a good and worthy service. They have stirred up the spirit of free, independent and more critical thinking. They have given a death blow to the religiously orthodox thinking of the Freudians themselves.

The adherents of the original Freudian movement cannot deny, as matters stand now, that there may have been some truth in the criticisms of those who were not avowed Freudians. Here, then, is an invitation to all Freudians to carefully and critically examine their premises and foundations and to face the facts as they are.

It means that the terms they have employed, the concepts they have supported, the conclusions they have arrived at may be reviewed by them in a more judicious and impartial manner. Let us hope that most of them will take the lesson to heart and boldly face the truth.

The French school, especially Janet, and Prince and Sidis, in the United States, have adopted a scientific attitude toward psychopathology which it would be well for many of us to follow. No one is asking that the Freudians abandon all their viewpoints. Many of their concepts are very helpful. They have given a stimulus to psychopathology (and its allies) which is great indeed. They can modify and elaborate those of their views that they may deem deserving of this labor. But let them be frank enough to admit, at least to themselves, that they have too blindly or uncritically followed a set system of thinking. And it is from this set system, virtually a closed, vicious cycle, that they must break away. This breaking away will lead to better and more accurate views of man and life.

To those who have been anti-Freudian or partially Freudian one may say that, be the past what it may have been, Freudism did give a tremendous impetus to many psychopathological workers who did not feel much of a stimulus before. For this impulse we should be truly grateful. It has given many of us who had not previously thought along such lines new intellectual interests. The field of psychopathology was much broadened in its scope. Some novel and inviting viewpoints were offered. Let us take what may be worth while in Freudism and throw away the rest. Let us pursue our new interests from a broad standpoint, taking note of the work and thought of others who have been plowing these fields for some time before our attention was directed to them by some of the extravagant views of the Freudian school.

The Freudian movement has for the most part spent its force. The split in the Freudian movement should lead to freer discussion and thinking amongst the followers of all ramifications of the Freudian line of attack upon things psychopathologic.

One of the fundamental errors in Freudism has been the anthropomorphic, I had better say ideomorphic, ideocentric, or ideogenetic, view of biological activities of all sorts. The behavioristic movement in psychology should put an end to this.

It is high time now that partisanship, almost of the sort we find in politics, should disappear in psychopathology. All workers in this field should use all available information to get to the bottom of things as they are.

Freud should be given credit where he deserves it. And so should Jung and Adler. And so, too, should the French school, particularly Janet. And, looming up very large at present, Prince and Sidis come to our aid. I venture to predict that the views of Prince and Sidis will come in for greater and greater recognition and consideration as the years go on. The gaps between psychopathology and so-called normal psychology are slowly being bridged. Before long psychopathology, united on all fronts, will be walking side by side with normal psychology, both going in the same direction.

The biological viewpoint is coming quickly into the field. Before long there will

be a general agreement amongst most of the students laboring earnestly in this difficult work.

The crisis in psychopathology has practically passed. Uncritical thinking is giving way to more scientific approach to the problem.

The future of psychopathology is bigger and brighter than it would have otherwise been.

Let us from now on hold fast to the scientific, critical trend in psychopathology.

EDITORIALS.

Conducted by

MARC RAY HUGHES, M. D., DAVID S. BOOTH, M. D.,
BAYARD HOLMES, M. D.

MEDICINE FROM A BUSINESS STANDPOINT.

Notwithstanding the physician's "future worth or discount" depends largely upon his income, and it is proverbial that the physician is either inherently a poor business man or becomes negligent of the business side of his profession by virtue of his absorption in his professional duties, it appears to be an unwritten law with the profession not to consider or discuss business matters however much the physician and his family may suffer from lax business methods, though it be due solely to a failure to collect for services actually rendered.

Occasionally we find a "sporadic" case of medical business "agitatus," but it is apparently not "infectious," though at times it is "contagious," since we have knowledge of a few districts in which it became "endemic" to the extent that the physicians organized for their "protection." Of many national, state and district medical societies which we have attended we have never heard an address referring to the business side of medicine, though a number of years ago we attended an association in a distant state on the program of which was a paper, "How to Make Money Out of the Practice of Medicine," but to our great disappointment the author was absent, possibly because he was unable to collect enough of the money he had "made" to defray his expenses.

Seldom we find a medical journalist courageous enough to attempt to arouse the profession to its financial interests and duties, but the appeal rarely receives even a comment from a contemporary, so that physicians continue to "eke out" a pretentious —possibly spectacular—existence for a brief period and either die young from overwork and anxiety, leaving their families unprovided for, or becoming invalidated or superannuated, are objects of charity.

The intrepid Lydston*, writing under the caption, "Why Not a Doctors Union?" says: "Why seek for an *esprit du corps* in the doctor who, being the only known organism that has not the instinct of self-preservation, consequently is the humblest creature of which biology takes congnizance."

Even should the physician be so magnanimous or philanthropic as to practice medicine only "for his health," it requires "means" to maintain his health, and it certainly requires health to be a competent physician in this strenuous and progressive age.

The laity has become so accustomed to physicians' lax business methods that the physician so alive to his business interests as to insist on collecting that which is due him not only becomes conspicuous, but is a mark for condemnation by the public, who, nevertheless, seek his services and "pay the price" when invalided, often forsaking the less insistent practitioner in so doing.

Evidently an exalted member of "the cloth" ran counter to such a one—possibly an overzealous business doctor, which caused the clergyman to "write up" and "rip up" the entire medical profession, contending, though, we think, not "maintaining the contention," that the fee system is erroneous, and through the liberal use of hyperbole and irony proved (?) by inference that physicians were but ordinary robbers.

Illinois Medical Journal, August, 1919.

We suspect the clergy would not make an enviable exhibit by the same process of reasoning. To condemn a class from isolated cases is as illogical as it is unjust.

Though this article appeared some three years ago, to our knowledge, no defense has ever been made, although we are confident it is not because it could not have been successfully made by most any member of the medical profession, but possibly because it was realized that one "cannot throw a stone at every barking dog," which proverbially "never bites," but we don't know that "the dog knows that we know it," nor do we know that it may not arouse more vicious and aggressive animals.

We feel confident that our critic has drawn upon his imagination when he states that the physician "usually charges what he thinks the patient can be induced to pay," though he might have said more correctly that the physician "often charges what the patient must be made to pay," however reasonable the charge may be.

He further states that those able to pay must pay for the physician's charity work, which is untrue, though certainly, if all patients were able to pay, and did pay, a fixed fee, that fee could be lower than the present average. All businesses must make their selling price of goods cover the overhead expenses, such as capital invested, rent, insurance, taxes, clerks' salaries, delivery, bookkeeping and collecting, as well as the losses due to failure to collect; the "self serving, cash and carry" plan proves this.

Did physicians not care for the indigent they would have to be cared for at public expense, which would mean that the "well-to-do" would pay for it through direct taxation.

It is not generally known that physicians render gratuitous services to all charity hospitals, as well as to a great many persons who cannot properly be classed as indigent, since, not caring to enter a public hospital and be classed as charity patients, they enter private hospitals, where they pay for the hospital service and receive medical services gratis, thus sparing the public the expense of their maintenance.

However, unlike the loss to the debtor for the merchant's "overhead charges," the physician's clientele are fully compensated for higher fees, which are necessary on account of services rendered for charity, because of the additional knowledge and experience the physician gains thereby.

The laity appear unmindful of the fact that the physician can only collect reasonable fees: besides, the physician could not long maintain his position if his fees were greater than his ability justified.

Our critic recites the story of a surgeon charging a patient three-fourths of his annual income for a surgical operation—a story we are not in a position to question, but if true, it was because the patient failed to acquaint himself with the surgeon's fees prior to the operation, as he should have done, giving the surgeon to believe, of course, that he knew and was able to pay his price; just as one would be expected to know and to pay the price of any work or article of merchandise he ordered without first ascertaining the price. However, "it is dollars to doughnuts"—not the world-famed Salvation Army brand, either—that an honest patient would have had no difficulty in satisfactorily adjusting and settling such a bill even after failing to do his duty in the premises—in which the doctor differs from all others, i. e., ordinarily accepts what the honest debtor with reasonable effort is able to pay and receives payment at the convenience of the debtor.

However, the doctor is so frequently imposed upon that it may not always be possible to convince him of the client's sincerity after the service is rendered, therefore one should make known his financial ability before the services are rendered.

While the laity has gained some conception of the value of surgical operations; it has not yet realized that medical service is often equally important by the early recognition of the need for prompt surgical intervention, and occasionally more valuable, since it may obviate the necessity for a surgical operation.

A friend, to whom the author was called at night in an emergency a number of years ago, was found suffering from appendicitis. A surgeon was called and removed a pus-distended appendix just in time to have it rupture outside. After his recovery he voluntarily sent a check for an amount equal the surgeon's fee for the operation, with the explanation that had the diagnosis not been made promptly he "would have been a 'croppie.'" This man had "some" sense of proportion.

Probably the greatest overworked and underpaid member of society is the family physician, to whom the following "fable"* especially refers:

"There was once a doctor who enjoyed great repute in his community because he never sent a bill until the patient asked for it. He was generally loved throughout the community. When he died his wife sold the household goods to pay the undertaker, whose bill arrived simultaneously with the coffin."

Never will investments net larger returns than will the liberal fees paid the faithful family physician, who is "on the job" twenty-four hours a day and seven days of the week.

The laity do not understand that the physician does not, like the merchant, have different grades of similar merchandise (or service) of which the customer may purchase according to his means, but he gives all the same service and charges according to the estimated grade of services (or goods) which the patient would want and could afford to purchase did the physician have different grades of service (or goods).

It does not appear to be generally known that physicians charge for "services rendered," and not for "results," which usually depend as much upon the patient in following the advice and instructions of the physician as upon the agencies prescribed.

The following from the *Chicago News* briefly defines the law regarding doctors' bills:

"Your doctor's bill, as a general rule, reads 'For professional services rendered.' That means that you are to pay for work done, and not for miracles performed. If you hire a doctor to attend you in sickness you enter a contract to pay for his expert services, whether he succeeds in curing you or not. It would be unfortunate for both parties in the contract if the terms were otherwise.

"Two things are not yet clearly understood by some people—first, a doctor's fee is collectable, and, second, a doctor is not legally bound to attend any one under any circumstances unless he wants to. You can't make a doctor work for a contingent fee, and you can't make him work at all if he chooses to refuse his services."

Ex-President Taft, while sitting on the bench, said: "A physician is not a warrantor of cures," etc.

Courts have held that physicians' "services are rendered with a view to charging patients according to their circumstances and positions in life." This is the only rational, just and equitable method of computing a physician's bill and the only method which will at all times and under all circumstances insure the necessary care and attention to the patient; since each receives the services of the physician of his choice at practically his own price, when compared to his financial standing as indicated by his mode of life.

All persons in the same line of work are not equally competent, hence do not earn the same pay, and few work for less than they can command, and where the rate is made the same, the work suffers—there is no incentive for superiority.

To meet all conditions, physicians' fee bills are composed of a sliding scale of rates and are applied by each individual physician in accordance with his standing, and are more often too low than too high.

It is impossible to judge of the physician's income by the number of personages in his waiting room unless one can distinguish between charity patients, "dead

*Journal of the American Medical Association, September 4, 1919.

beats," collectors and representatives of "wildcat get rich" concerns awaiting to obtain the earnings paid by the renumerative contingent.

Notwithstanding the greatly increased price of every commodity the past few years, in very few instances have physicians' fees increased, and then only where they were originally ridiculously low, although there should be concerted action in this direction.

Having recently noticed in the daily press that lawyers had raised their fees, we are reminded of the following observations of a professional brother* in a distant state:

"The average man will give a lawyer from three hundred to five hundred dollars, together with a lifetime praise, to keep him out of the penitentiary for from two to ten years, and at the same time he will raise a phosphorescent glow and a kick that can be heard around the world if the doctor charges him fifty to one hundred dollars to keep him out of hell for a lifetime."

Physicians, by reason of their increased efficiency, due to the marvelous advancement in medicine the past two decades, are more justly entitled to increased recompense than any other class of breadwinners.

The physician who keeps reasonably abreast of the times in refined diagnostic methods, does so at a great expenditure of time and money, and finds it necessary to devote a great deal more time to the investigation and physical examination of his patients.

Furthermore, we have learned that symptoms—especially subjective symptoms —are misleading, besides serious diseases may exist without giving the afflicted any evidence of their presence, as disclosed by life insurance and draft board examinations, which should be imparted to the laity, who should be instructed regarding the necessity for periodical physical examinations.

It behooves the medical profession to assail the prevalent idea that medicine is not a science simply because results are not always favorable; measured by this standard there could be no science. Science is knowledge, and not the practical application of that knowledge.

Physicians should give more attention to collections and to the elimination of the "dead beats," who for one or more of the several stereotyped "causes" common to this class, fail or refuse to pay for medical service, much of which is rendered them as strangers in emergencies, out of regular working hours and through the kindness of heart of the medical attendant.

Alexander Pope, over two centuries ago, combined truth and poetry in the following bit of satire:

"God and the Doctor, we alike adore,
But only when in danger, not before;
The danger o'er, both are alike requited,
God is forgotten and the Doctor slighted."

Gratitude, if it exist at all, is at its flood during the acme of the disease, thenceforth being inversely proportionate to the square of the time which elapses after the crisis; hence the logical psychological moment for the physician's recompense would be clearly indicated, were it not for the fact that the doctor's bill is often misconstrued as a "challenge to fight."

Physicians have been slow to learn that he who fails or refuses to pay one physician will, when opportunity presents, repeat the offense.

We do not refer to the indigent poor, who are usually the most grateful patients and who will always receive cheerful gratuitious attention from the true physician.

The *Journal of the Indiana State Medical Society* (May, 1917) had to say editorially that:

*J. E. Dildy: The Business Side of General Medicine, *Texas State Medical Journal*, February, 1907.

"It is surprising how many men can buy new automobiles for pleasure, and pay cash for them, but cannot raise enough money to pay their doctor bills. Furthermore, it is surprising how complacently the members of the medical profession accept that condition of affairs. The doctor's worst enemies are those who owe him, and those who owe the doctor the longest and are extended the greatest leniency are the ones who are most vicious in their enmity. Why do doctors not learn a lesson from this?"

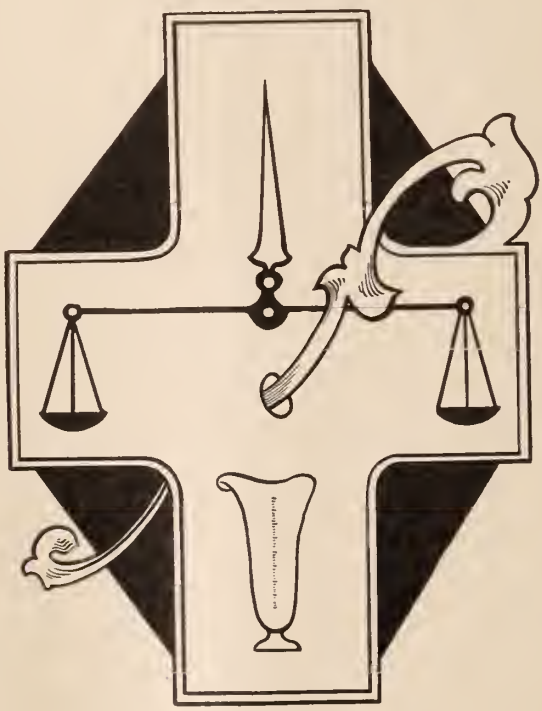
After the doctor has rendered faithful and conscientious service and presented an honest and reasonable bill which does not receive a voluntary response from the debtor, so it is necessary to press collection, he will then discover that he is "between the devil and the deep sea." If he employs a competent collector he often fails to obtain a proper accounting; if he undertakes to collect for himself he finds the laws and postal rulings favor the "dead beat," who, evidently, is better acquainted with the law than is the average doctor.

Yet doctors will take no concerted action to provide proper and just means for collecting their hard-earned fees or to prevent "dead beats" from having an active part in framing laws to protect themselves.

When the physician has rendered services he owes it to his dependents, to himself and, not least, to his colleagues to apply all available business and legal methods in collecting what is due him. Certainly there is nothing "unprofessional" or "undignified" in this.

Surely he who has the altruistic spirit of the true physician, possesses brotherly love to aid in protecting his fraternity from injustice, if not from ingratitude.

Here is for a long pull! a strong pull!! a pull all together!!!. D. S. B.



SELECTIONS.

CLINICAL NEUROLOGY

HYSTERICAL COMPLICATIONS OF "RHEUMATISM":—R. G. Gordon, *Seale Hayne Neurological Studies*, April, 1919, refers to the now quite general opinion that the term rheumatism is used much too loosely both by the laity and the medical profession. Any ache or pain, whether in the muscles, bones or joints, is referred to as rheumatic, and any stiffening or deformity associated with or following after such pains is described as the result of rheumatism.

In the army an attempt has been made to confine the term rheumatism to its proper use, which is to describe an acute febrile condition, accompanied by articular pain and swelling, more accurately called acute rheumatism or rheumatic fever. The vague term "rheumatism," which is used in civil practice, is replaced in army practice by the term "myalgia." Thousands of soldiers have been invalided and discharged with this diagnosis. Amongst these no doubt there are a certain number suffering from chronic articular conditions, such as rheumatoid arthritis, osteoarthritis, villous and gonococcal arthritis, but the vast majority of them should be diagnosed as cases of fibrositis, a condition which may be manifested in the muscles, joints or peri-articular structures.

Fibrositis can always be diagnosed with certainty by the presence of nodules, which can be detected quite easily by the careful palpation of muscles and fascia, in which they can actually be felt if the parts are properly relaxed. Pressure upon these nodules may produce radiating pains in the rest of the muscle, and in the early stages of the disability it is often easier to detect them as tender points than as palpable differences of structure.

Where nodules are not present and where the other more serious joint conditions can be excluded, we must presume there is no active disease. In such cases the patient will still complain of pain and stiffness and may be much crippled, assuming abnormal postures and gaits. Many of these soldiers have continued in the same state of disability for many months. As a result the position of ease for the muscles during the acute condition has resulted in abnormal postures, which have been maintained subconsciously after the inflammatory condition has passed off. Such postures then are true hysterical symptoms, for they are produced and maintained by the suggestion prompted by the acute disease. In this state the pain which is present is no longer due to inflammation, but to the cramp produced by the muscles which are being held in a state of abnormal tone and to the stretching of fibrous tissues and of other muscles, as well as to the pressure which is being kept up on abnormal surfaces in the joints. The successful treatment of these cases is at once followed by the absolute disappearance of the pain when the normal posture and gait are restored.

Although the result of suggestion in the cases under discussion is as a rule fairly constant, namely, the immobilization of a limb or of the trunk by involuntary muscular rigidity, it is as well to distinguish clearly two forms of suggestive influences. In the first group the patient will give a history of muscular pain, which he will refer to as muscular rheumatism, myalgia, lumbago, neuritis or sciatica, according to the location of the discomfort. To this group should be added the numerous cases in which the patients complain of persistent pain and stiffness after trench fever. The pain in the latter condition is presumably due to a toxic fibrositis. In such cases the rigidity generally affects the whole, rather than one definite joint. In the second

group the history will be of a definite inflammation of a joint. If the original infection was mono-articular, the patient will hold that particular joint stiff while the others may be freely movable.

Having satisfied one's self that the condition is truly hysterical, the treatment to be adopted is the same as for other hysterical conditions, viz., persuasion and re-education. The true nature of the condition is first explained to the patient, his confidence and co-operation are invited, the extent to which these important factors are obtained depending upon the personality and persuasive powers of the physician. In their absence treatment will be difficult, and in order to get them the physician must impress upon the patient that he is really taking an interest in him and that his sole object is to cure him. Next the patient is shown how he is keeping certain muscles tight and how on attempting any movement they pass into a condition of spasm. He is then placed upon a bed and told to relax his whole body completely, specially directing his mind to the relaxation of the muscles involved. Passive movement is now carried out, and without any violence the muscles are loosened and the limb can be brought into a normal position. The question of how much pain the patient is called upon to suffer is very important. It would seem that a certain amount of pain must often be experienced in the process of relaxation of muscular spasm, but this in uncomplicated cases should never be of a severe nature. Always taking into account the reaction of the patient towards pain and the violence of his emotional expression, pain which is obviously severe means either that adhesions are present, which require breaking down, or that a joint condition is being dealt with which is more serious than had appeared at first sight.

If much pain is experienced other methods of diagnosis must be employed, and a good skiagram and possibly an examination under an anæsthetic will be helpful. In cases where the lower limb is involved, spinal anaesthesia is often extremely useful, for under the relaxation thereby induced the amount of limitation of movement due to purely muscular spasm can be determined and the patient, being conscious, can see for himself to what extent his limb is freely movable and is encouraged to carry out voluntary movements as his power returns.

When the limb has been brought into a normal position the patient must at once be made to use it and should not be left until he has attained a high degree of perfection in moving it in every possible direction. This concentration of the cure into one sitting is the crux of the whole problem, for unless the patient is brought along sufficiently far to see for himself that he is really going to be cured, he is very likely to relapse into his old state before the treatment is begun the next day. This is what makes massage treatment so disappointing, even though it is intelligently carried out and accompanied by encouragement of the patient to make voluntary movement. A slight degree of progress is achieved, but the treatment is not sufficiently prolonged to stabilize this, and by the time it is again undertaken the whole process has to be gone through again. On the other hand, completion of the cure by psychotherapy, though often accomplished in a few minutes, sometimes requires a sitting of one or two or even many hours, but once the requisite degree of voluntary movement is obtained, it is stabilized by the fact that the patient sees he really can move and he is only too eager to progress. Many doctors complain that they cannot spare the time for such a long sitting with one patient. This is a fallacious argument, for the amount of time which they eventually spend over the patient, perhaps in the end without obtaining a cure, will amount to many times the duration required to obtain a successful result in a single sitting.

Having taught the patient to make all normal movements with his limb, it is generally necessary to re-educate him still further in order to employ these movements for particular purposes; otherwise he is apt to keep the limb immobilized in spite of

the fact that movements are not only possible, but painless. For this purpose congenial occupation is undoubtedly best, and he should be put to some work in which his interest is aroused, so that he uses his limb automatically, and in a very short time he will regain the full utility which he enjoyed before his attack of rheumatism.

By way of illustration the author reports briefly a number of cases and concludes by calling attention to the important fact that the less handling the patient has the more sure he will be of the physician's confidence in his ability to cure, which is one of the chief factors in successful treatment.

SOME PRACTICAL POINTS IN THE DIAGNOSIS OF SYPHILIS OF THE NERVOUS SYSTEM:—Edward Livingston Hunt, *New York Medical Record*, 1919 vol. xvc, p. 391, expresses the belief that the history in syphilis is not so important as one has been led to believe from textbooks and teaching. The man who has had syphilis does not wish to realize it, and often is unwilling to admit it. The practical points in the clinical examination of the syphilitic are: (1) The condition of the pupils; (2) the condition of the reflexes; (3) the condition of the circulation. Of these three by far the most important is the condition of the pupil. In examining the pupil look for three things—size, contour and reaction to both light and accommodation. The pinpoint pupil is much more suggestive than the dilated. Markedly unequal pupils are even more suggestive. The contour of the pupil is something which the neurologist looks for but which the general practitioner is prone to neglect. Of course, we know what contour means—the outlines of the pupil. In the normal individual this should be smooth and even. Syphilis causes rough and unequal edges. Apparently the poison causes a breaking or bulging out of the line of the pupil. Perhaps the most important of all these three eye signs is that of the reflexes. A very sure, almost definite sign of syphilis is the failure of the pupil to react to light. The condition of the tendon reflexes is of equal importance with that of the pupil. Changes in the reflexes do not, however, occur as early, nor progress as fast. The important reflex affected in syphilis is the knee jerk. We must bear in mind not only that it may be absent but also that it may be exaggerated or that the two knee jerks may be unequal. The condition which an examination of the circulation reveals is of equal importance with the one shown by the reflexes and with that of the pupil. The heart may be enlarged, there may be valvular lesions, especially aortic, and there may be a dilatation of the aorta, or even an aneurysm. There may be very high blood pressure, or there may be palpable thickening of the arteries. The author calls attention to the laboratory analyses which can and should be made in the examination of syphilis of the nervous system. They may be classified under two headings—those of the blood and those of the spinal fluid. Of the two undoubtedly the examination of the spinal fluid is more important. The cell count is not considered of so much importance as formerly. All we can tell from a large cell count is that there is an inflammation, an irritation, an abnormal condition in the spinal canal. This may be due to syphilis, mechanical disturbances or a meningeal infection. A very important test is the colloidal gold. It is difficult to make, it requires a good deal of time, and the solution easily deteriorates. The gold test is the one of all most to be relied upon. When the cell count, the Wassermann and the gold test are taken together they form three arguments which the author considers more valuable and more infallible than any other three—either the history, the clinical examination or the X-ray pictures. The X-ray is of value because it reveals the enlarged aorta, the beginning aneurysm, the dilated heart and occasionally some specific condition in the head. Finally, the one important point in diagnosing syphilis of the nervous system is to get as much data as possible and then to correlate it properly. Weigh the history with the clinical findings, with the laboratory report, and the X-

ray pictures. Do not stop at any one of the four, or at any three of the four.—*American Journal of Syphilis.*

HYSTERICAL ANAESTHESIA, WITH SPECIAL REFERENCE TO THE HYSTERICAL ELEMENT IN THE SYMPTOMS ARISING FROM INJURIES TO PERIPHERAL NERVES:—A. F. Hurst, and S. H. Wilkinson, *Seale Hayne Neurological Studies*, April, 1919, report a number of cases of hysterical anaesthesia not exhibiting the three usual characteristic features, viz., (1) rarely, if ever, recognized spontaneously by the patient, and only discovered in the course of examination by the physician; (2) rarely, if ever, causes any inconvenience to the patient, who is able to perform movements with normal accuracy so long as no paralysis is associated with it and never leads to accidental burns or other injuries, and (3), always occurs in certain characteristic [psychic] areas, such as one-half of the body, the whole of a limb or the area covered by a glove or stocking.

The author's cases cause them to conclude that an entirely different class of hysterical anaesthesia exists, which differs from the only form described by Charcot and the authors of most text-books of medicine and neurology by showing none of the three characteristic features mentioned above. The patient is well aware of its existence before he is examined; it causes more or less inconvenience and may lead to accidental burns and other injuries, and the areas of anaesthesia differ materially from those hitherto regarded as the only ones occurring in hysteria. The hysterical nature of this variety of anaesthesia may be extremely difficult to recognize, as it is always a sequel of the anaesthesia caused by some organic condition, and resembles the latter in all its details. They studied more particularly the hysterical anaesthesia which follows the organic anaesthesia produced by nerve injuries, but hysterical anesthesia may also be a sequel of the less familiar anaesthesia associated with peripheral vascular disturbances, and of the anaesthesia caused by lesions of the central nervous system.

The incapacity resulting from diseases and injuries of the central nervous system tend to be perpetuated by suggestion as hysterical symptoms, when more or less complete recovery from the lesion is taking place, and the organic incapacity should be disappearing *pari passu*. Exactly the same thing occurs with injuries and diseases of peripheral nerves. The paralysis and anaesthesia following an injury to a peripheral nerve, which is caused by the interruption in the nervous impulses passing between the central nervous system and the periphery, may both be perpetuated as hysterical symptoms when the interruption is no longer present.

A gunshot wound in the immediate neighborhood of a nerve produces minute changes in its structure which quickly disappear, but, evanescent as these concussion changes are, they are none the less organic, and the paralysis and anaesthesia they produce are primarily of organic origin. The patient may at first make repeated attempts to contract the muscles supplied by the nerve, but as he invariably fails, he finally discontinues and realizes that the muscles are paralyzed. If the true nature of the condition is recognized and the patient is encouraged by the surgeon to repeat his attempts every day he will find in a very short time that his power is returning. If, on the other hand, the condition is misunderstood and the patient is ordered treatment with electricity and massage and is given to understand that he may have to continue with this treatment for weeks or months before recovery will take place, the original tendency to perpetuate the incapacity by auto-suggestion is greatly strengthened by the hetero-suggestion involved in the treatment, with the result that by the time the nerve has completely recovered the organic incapacity is replaced by an exactly similar hysterical incapacity. In the same way the primary organic anaesthesia is perpetuated as hysterical anaesthesia with all its characteristics unaltered, particularly if the patient's attention has been drawn to its extent and its exact nature by

the thorough investigations of a keen and interested medical officer in the early stages, when the condition is still organic.

If the nerve is more seriously damaged, especially if it has been divided and subsequently sutured, the primary organic condition lasts for a longer period, and its characteristics are all the more likely to become vividly stamped on the patient's mind and to become perpetuated as hysterical phenomena when recovery from the actual injury at last occurs.

The authors believe that the voluntary power of paralyzed muscles returns before the response to faradism when an injured or divided and sutured nerve is regenerating—an opinion which is shared by most observers. When complete paralysis has been present for many weeks it is natural that a man should cease to make an effort to move the affected part, so that it is extremely likely that he will not become aware of his returning power at the first moment that the regenerating nerve is capable of conveying motor impulses. If left to himself he will probably only make the discovery some weeks later, when a considerable degree of power has returned and the normal electrical reactions are re-established. If he is receiving regular electrical treatment the discovery of a response to faradism will be likely to prompt the operator to tell him to make an effort to move, which will in all probability be successful owing to the suggeestive effort of the ocular demonstration of the response to faradism. Under more favorable conditions the patient would be seen frequently by the physician, who would encourage him to make daily efforts to contract the paralyzed muscles, with the result that the returning power would be recognized at an early stage—frequently before there is any response to faradism.

If from the beginning no attention is paid to the anaesthesia it will disappear spontaneously when the motor symptoms are cured. If, however, it has been carefully investigated and its extent and nature have become thoroughly recognized by the patient is likely to persist as hysterical anaesthesia. It can then be cured almost instantaneously by the suggestive effect of the application of a faradic current, the patient being first told that his sensation will at once return when the electricity is applied. He quickly feels the electricity and directly afterwards it is demonstrated to him that he can now also feel the lightest touch, as well as pain, and can distinguish accurately between hot and cold. This immediate recovery with suggestion proves that the condition must be genuinely hysterical.

Whenever the hands or feet of healthy individuals get abnormally cold the anaemia resulting from the contraction of the peripheral vessels is accompanied by a subjective feeling of numbness and an objective diminution in the acuteness of cutaneous sensibility. It is in consequence of this well-known fact that it is commonly recommended that the cutaneous sensibility should be investigated in a warm room. Individuals with feeble circulation are particularly apt to get numb extremities in cold weather, and in the condition known as Raynaud's disease a similar but much more severe anaemia with a greater deficiency of cutaneous sensibility occurs as a result of vaso-motor spasm, even when the weather is not unusually cold. When the feet are affected by the cold the plantar reflex disappears, but with the restoration of the circulation by exercise or the application of warmth and the consequent disappearance of hypo-aesthesia, the reflex returns. The loss of the reflex is clearly due to the deficiency of the afferent impulses from the skin, which under normal conditions give rise simultaneously to the sensation of touch and to the plantar reflex.

It is natural that the immobility caused by paralysis or contracture of a limb, whether the latter is organic or hysterical, should result in deficient circulation, which is accompanied by numbness and anaesthesia. As the deficient circulation is continuous instead of intermittent, as in the physiological conditions already referred to, the anaesthesia becomes more profound, especially in individuals who have a feeble

circulation. The anaesthesia may be so profound that the patient may burn himself without being aware of it. When the circulation is temporarily improved by immersing the limbs in hot water, normal cutaneous sensibility returns, and in hysterical cases the improved circulation which results from the recovery of mobility and disappearance of spasm under psychotherapy is immediately followed by a return of normal cutaneous sensibility, even if the condition has persisted for months or as long as two or three years.

If, however, much attention has been paid to the anaesthesia which results from the poor circulation in hysterical paralysis and contracture, and its exact extent has been carefully mapped out on several occasions, the symptom takes such a prominent place in the patient's mind, instead of being one of which he is hardly aware, that it is very liable to be perpetuated by auto-suggestion when recovery from the paralysis and contracture takes place. The patient does not associate the anaesthesia with the diminshed circulation, but regards it as an independent symptom, which will, therefore, require separate treatment by re-education or suggestion after the paralysis and contracture have been dealt with. That the anaesthesia is purely hysterical when it persists after recovery from the paralysis is proved by its immediate disappearance with suggestion, although whilst the paralysis is still present suggestion has no effect, as the anaesthesia is then a direct result of the peripheral anaemia and is incapable of amelioration so long as the latter is present.

If the hysterical paralysis does not improve as rapidly as it should with the ordinary psychotherapeutic measures, direct treatment of the anaesthesia with faradism may hasten recovery, if the patient is told that the return of sensation to his hand will enable him to move it.

INTRASPINAL THERAPY IN NEUROSYPHILIS:—John A. Fordyce, *American Journal of Syphilis*, July, 1919, writes that the results following the treatment of syphilis are largely dependent on the age of the infection.

In early syphilis the spirochetes are numerous, widely disseminated, and cause little or no tissue destruction, organisms accessible to the specific drugs are destroyed and in favorable cases cures are obtained. If treatment is not carried out in an intensive fashion the organisms persist in the viscera, cardiovascular or nervous system and slowly cause tissue reactions and final degeneration.

A serologic cure in cases of syphilis in the late secondary stage and following this is difficult to obtain and requires expert knowledge in the use of our therapeutic agents.

When the central nervous system is invaded the problem is complicated by the highly organized nature of the tissues, the results of secondary degenerations and the inaccessibility of the spirochetes in certain types of neurosyphilis. In the majority of cases a strain of spirochetes invades the cerebrospinal axis before or during the treatment by drugs by the usual channels and fails to respond to continuous administration of antisyphilitic agents given in this way. The progress of the infection may be delayed by drugs assisted by the defensive forces of the body. It is seldom cured. Clinical symptoms are modified or disappear for a time, but usually return unless the serology of the spinal fluid and blood become negative for a definite period. The control of the pathologic changes in the brain and cord is only possible by repeated examinations of the spinal fluid. The intensive use of salvarsan intravenously combined with mercury and potassium iodide, cures a definite number of cases. All methods of treatment fail in certain types of neurosyphilis because of the inability to reach the organisms in inaccessible localities and because of secondary degenerations of tissue which can not be restored. Intraspinal treatment is successful in certain types which

fail to respond to other methods or which become stationary after a definite clinical and serological improvement.

Success or failure in the use of intraspinal therapy depends on the technic employed and the persistence of the physician in carrying it out. Above all it depends on the cytobiological indications which are present in the spinal fluid for initiating or persisting in this mode of therapy.

The order in which the various reactions disappear is indicated in the accompanying tables. The cytology is usually the first phase to be influenced in persistent infections. In some cases treatment must be continued for from one to two years before a definite impression is made on the globulin content or the Wassermann reaction. Modification in the intensity of the globulin reaction is usually followed by a weakening in the strength of the Wassermann and by a change in the gold sol reaction. Rapid changes in the Wassermann reaction when strongly positive in the high dilutions do not occur except in cases of early syphilitic meningitis. In old cases of neurosyphilis a gradual diminution in the intensity of the Wassermann reaction is of good prognostic import and when it finally becomes negative, cases examined after one, two and three years have shown no return of any of the previous phases.

A Case of Absence of All Sensation:—E. D. Roberts, *The Lancet*, October 19th, 1918, reports the remarkable case of a soldier who enlisted in the Canadian army in 1916. In June, 1918, he was admitted to the Military Isolation Hospital, Aldershot, for an attack of mumps, and the following observations made:

The patient was a well-developed, powerful looking man. Mentally he was perfectly sound, rather above than below the average level of intelligence. As far as history goes he would appear to be alone in presenting the peculiar characteristics here described. As a child he appears to have possessed a slight degree of cutaneous sensibility, and he dates its complete absence from the time when he had an attack of yellow fever at the age of 17. This was his only previous malady, and he has always enjoyed robust health.

There is complete absence of both superficial and deep tactile sense over the whole skin surface, and also over mucous membranes. There is no consciousness of deep vibration. He does not feel the ground with his feet and experiences difficulty when walking at night.

The sense of pain is completely absent. In 1916 he underwent the operation of double inguinal hernia without anesthetic of any kind. He never suffers from headache, toothache, abdominal or other visceral pain of any description. The corneae share in general anesthesia.

Thermal sensation is also absent. There is no perception of temperature in food or drink. There is insensibility to atmospheric changes of temperature.

The muscular sense of position seem to be completely absent. With the eyes closed, if asked to make any movement with his arms he is incapable of doing so, saying that he cannot tell whether his arms are moving or not. On the other hand, when standing upright, with closed eyes, if he is told to walk towards the observer he does so without trouble. If any small object is placed in one hand and a much heavier one in the other, he is incapable of saying which hand holds the heavier weight. He appears ignorant of the meaning of fatigue.

The sense of position is equally absent. With visual control all his movements are perfectly co-ordinated and in every way normal.

He exhibits the phenomenon of fixation of the limbs in the positions in which they are placed.

The sense of taste is completely absent. He eats anything that takes his fancy. It appears that he is neveer conscious of hunger or thirst.

The sense of smell is practically non-existent.

The bowels usually act regularly once a day. There is no conscious desire to defecate beyond what he describes as an occasional "rolling" in the abdomen.

Micturition ordinarily occurs during the action of the bowels once in 24 hours. There is never a desire to micturate.

Finally, he seems to be without most of the common emotions.

Diagnosis of syringomyelia combined with hysteria is suggested as one which seems to meet the case.—*War Medicine.*

A Case of Hysterical Idioglossia in a Soldier:—C. H. Ripman, *Seale Hayne Neurological Studies*, April, 1919, reports a case of such a condition which has been found to be not very uncommon in children. The patients seem to speak a distinct language of their own, substituting alternative sounds for the consonants, but pronouncing the vowels correctly. In severe cases they are quite unintelligible, except perhaps to their little brothers and sisters, who often understand them, but slighter degrees are met with.

Investigations in children have resulted in the following conclusions:

1. It is not associated with weakness of intellect.
2. There is often a family history of insanity.
3. It is only an exaggerated form of minor and extremely common defects of speech.
4. It is probably due to congenital deficient appreciation of musical tone.
5. It is not associated with any malformation of the organs of speech.

It occurs more commonly in boys than in girls, though a case has been recorded in a young woman of twenty. The patients gradually learn to speak quite normally.

So far as the author has been able to ascertain the following is the only case on record of idioglossia occurring at a later age in an individual who had previously spoken normally. This condition of acquired idioglossia is apparently hysterical.

Pte. W. W., aged 42, a navvy in civil life, stood fire quite well until December, 1916, when he was blown up in a mine. He remembers nothing for seven or eight days. On regaining consciousness he was mute. He gradually learned to speak, but apparently always with a defect of speech. He continued in this condition for two years until his admission to this hospital. On admission he was depressed, quarrelsome, difficult to manage, slow and stupid, but he gradually improved, and though never very intelligent, he was able to take part in the life of the ward. He was illiterate and could only write his own surname. The other patient taught him to read a little and he had quite a good idea of music and could hum and sing popular melodies without difficulty. On admission he was extremely difficult to understand; when he spoke quite slowly it was, however, generally possible to make out what he said. Later, as a result of re-education, he could pronounce almost any word correctly if he gave his attention to the matter, and even apart from this he was now always intelligible.

It was noted that the patient was not consistent in his mispronunciation, as most letters were mispronounced in some words and pronounced correctly in others; there were no sounds he could not produce; he was inclined to be very slovenly over the terminal syllables or consonants in words, sometimes omitting mesial syllables; he went very much to grief over words with which he was not familiar and found difficulty with words which were heavily loaded with consonants.

The Longitudinal Sinus:—Its Adaptability in Procuring Blood for Diagnosis—Its Use in Transfusion of Blood and for Diagnostic Purposes—An Ideal

Method in Infancy.—Louis Fisher, *New York State Journ. of Medicine*, May, 1919, from a comparison of the ease with which one enters the sinus located at the posterior aspect of the anterior fontanel with the difficulty in trying to enter a vein the size of the medium basilic or even the femoral in infancy, expresses the opinion that our choice will favor the sinus route, which is so simple that even an inexperiencd operator need not hesitate to try it.

The longitudinal sinus furnishes a direct channel through which a small or large quantity of blood can rapidly be taken from, or added to, the circulation. Since time counts for a great deal in depleted and marasmic infants, the simpler the route the more advantageous to the infant.

There are many obscure lesions in infancy which demand that syphilis be excluded before a positive diagnosis can be made. To obtain sufficient blood for a Wassermann Test by aspirating blood from a vein is a difficult problem. Any one who has tried the elbow, thigh or even the jugular vein for intravenous transfusion will recall the difficulty encountered in getting into the vein and the time lost by this complicated method. Scarification of the skin, followed by suction with a Bier cup is also a slow and painful method commonly used.

The longitudinal sinus is adapted for the abstraction of blood as in venesection during convulsions. The relief afforded by this means is rapid and does not produce shock. Intracranial pressure can be relieved quickly and this method of local depletion serves as well as a lumbar puncture. This route is also adapted for procuring sufficient blood in the most rapid manner for blood culture. This point should be noted in suspected sinus thrombosis or malignant endocarditis. This route is especially valuable in procuring blood for a Wassermann test. It is a rapid and convenient place to give a salvarsan injection or for an injection of normal saline solution as suggested by Marfan.

There are a few points which should be noted in procuring blood by this method. Carefully done there is no danger of infection, nor is there any shock following the operation.

The infant should be wrapped in a mummy bandage, well pinned so that the arms and legs are confined, and placed flat on its back on the table. The head should be steadied on both sides by an assistant while the needle is inserted into the sinus. As the longitudinal sinus lies very superficial, one need rarely go deeper than one or two millimetres. For this purpose a needle one-half inch long of a 20 or 22 gauge, and with a short bevel point, is best adapted. After the needle penetrates the sinus, which is felt by the lessened resistance, one is ready to aspirate sufficient blood for diagnostic purposes, or transfuse the required quantity of blood medication. The fluid, be it saline or salvarsan solution, is best given by gravity (Helmholz) and should be given slowly. A cylinder with a capacity of 30 to 100 c. c. may be used. One end of a piece of rubber tubing is attached to the cylinder and the other end has a connecting tip which fits into the needle. It is of advantage to have a stopcock at the end of the cylinder or near the end of the tubing. The needle is inserted with a small syringe attached. By slight aspiration one can determine whether the sinus has been entered, if so, the syringe is detached and the apparatus for the injection, which has been filled and the air expelled, is connected.

During the injection the infant should be closely observed—his color, pulse and respiration noted.

Increased intracranial pressure has never been noted by the author following this method of transfusion. When bulging fontanel was noted it was usually associated with distended lateral ventricles, and is no contraindication to sinus treatment.

When a warm saline injection is indicated from 50 to 100 c. c. can easily be added to the circulation.

ON THE COMPLETE CONTROL OF EPILEPTIC SEIZURES BY LUMINAL:—Dercum, *The Therapeutic Gazette*, Sept. 15th, 1919, relates his experience with the use of luminal in epilepsy during the past five years.

The author began by giving the drug in divided doses three times a day, but found it sometimes made the patient a little heavy during the day and occasionally caused dizziness. These symptoms did not appear if the drug was given in a single dose at bed-time, while it was equally efficient.

The small quantity of the drug required, viz., a grain and one-half of luminal, or two grains of luminal sodium at bed-time is noteworthy.

The drug is especially efficacious in the group of the "essential" or "morphologic" epilepsies, though, also, effective in epilepsies of other origin, and prolonged administration did not cause the slightest deleterious or untoward effect either upon the respiration, circulation or mentality of the patient, nor was there produced a drug habit or craving, since the action of the drug is unattended by either pleasurable or disagreeable sensation.

Occasionally luminal does not at once control the seizures, but by administering small doses of bromides three times daily for a brief period at the time of beginning the luminal the action of the latter was established more promptly and the bromide can be withdrawn at the end of 10 days to two weeks and the seizures completed inhibited by the further administering of the luminal; in any instance results were more prompt when patients were placed on the generally accepted regimen for epileptics.

The author's method is to prescribe, on the average, 20 grains of sodium bromide, which the author invariably uses because of the probability that during the sodium chloride withdrawal it replaces the latter in the tissues, to be taken three times a day after meals and a dose of one and one-half grains of luminal at bed-time. The epileptic attacks are usually controlled almost immediately. In a few days the dose of the bromide is reduced to one-half and finally discontinued. The luminal is continued uninterruptedly for as long as over two years, with no untoward symptoms.

Luminal is a member of the group of drugs to which belong adalin, barbital and barbital sodium. It was first, and until recently solely, made in Germany. It was not a drug much used in this country and as a hypnotic is very inferior to barbital and barbital sodium.

The author does not venture a positive opinion as to how luminal acts, but thinks it exceedingly probable that it has a specific action on the cortical motor neurones.

THE NERVOUS CHILD AND HIS MANAGEMENT:—E. Bosworth McCready, *Medical Record*, states that nervous inadequacy is the rule, rather than the exception in modern life. Nervous stability of the adult is dependent on hereditary endowment and on the stimulative forces of nature and nurture. The modern home is often conducted with no thought of furnishing a suitable environment for the child. Nervous instability occurred as a result of (1) hereditary deficiency in development forces; (2) hereditary deficiency aggravated by inadequate stimulus through nurture; (3) malign factors in the environment affecting an hereditary sound constitution in which the stimulative development forces were adequate, or in which there existed an insufficiency or perversion of stimulative forces. Early childhood was the time for the institution of corrective measures. Corrective measures should aim to stimulative developmental forces and to remove or counteract malign factors in the environment. Such measures might be broadly grouped under medical, hygienic and educational. Tonics, alteratives and organic preparations were of value in medical treatment. In outlining a plan of treatment for the nervous child he stated that first

a proper environment must be secured; to gain this end it was often necessary to remove the child from his customary environment. A large percentage of children in well-to-do homes were undernourished. One of the first essentials in the treatment of the nervous child was to see that he had a properly balanced ration and was receiving a sufficient quantity of food. Other essentials were exercise and fresh air. Life in a modern apartment was a pest for anyone and an abomination for the child. He advocated the return to a fairly primitive form of life. Seguin had said many years ago that they should teach nothing from textbooks that could be learned from nature, nothing indoors that could be learned from nature, and nothing from dead nature that could be learned from living nature. The time would come when that plan would be carried out with the modifications necessary to meet the needs of the time. Garden schools and fresh air schools were a step in that direction and the results already demonstrated in such schools warranted their further development.—*Nashville Jour. of Med. and Surg.*

THE ARGYLL-ROBERTSON SIGN:—Rasquin and Dujardin, *West Virginia Medical Journal*, September, 1919, assert that the discovery of the Argyll-Robertson sign calls at once for making out the balance sheet as regards syphilis. It may be the only sign of the disease and the patient may not be aware that he has it and may feel perfectly well. Nevertheless he must be told of the danger in which he stands and the urgent necessity for treatment must be impressed on him as the only chance for him to escape some severe nervous affection, general paralysis, for example. The balance sheet can be drawn with great precision nowadays by the data obtained from the examination of the blood, spinal fluid and the reaction to luetin. We can thus form a kind of biologic formula which can be compared with the typical formulas of the principal syphilitic nervous affections, and thus foretells the outcome. If the Bordet-Wassermann test of the blood is negative reactivation must be tried. If this is negative then lumbar puncture must be done, and only when all of these give a negative response are we justified in keeping the patient merely under surveillance. When the findings in the spinal fluid are seen to be exactly like those with grave nervous affections, the patient becomes convinced of the desirability of treatment. These old forms of syphilis are often very slow in responding to treatment, even quite active. As the reactions return to normal under treatment the patient will understand better and will submit more docilely to our therapeutic efforts. By comparing the biologic formulas from time to time we can supervise conditions as they improve and further convince the patient of the wisdom of thorough treatment.

SYPHILIS AND PARASYPHILIS OF THE CENTRAL NERVOUS SYSTEM, DIAGNOSIS, PROGNOSIS AND TREATMENT:—M. Neustaedter, New York, *Medical Record*, 1919, vol. xcv, p. 265, believes all methods of determining which case is beyond help and which is still amenable to treatment are purely speculative, since no positive signs are available to diagnose that *intra vitam*. Since even in cases with markedly evident organic changes, as in tabes, many symptoms have been ameliorated, notably the various crises, and in paretic and taboparetic syndromes beneficial results were obtained, we are justified in treating every case along the well-established lines. —*American Journal of Syphilis.*

SYPHILIS IN RELATION TO THE CENTRAL NERVOUS SYSTEM.—L. H. Cornwall, (*Military Surgeon*) states that approximately 79 per cent. of cases of lues in the secondary stage, especially those with cutaneous lesions other than roseola, show pathological changes in the spinal fluid. This fact justifies the conclusion that the

potential foci for the subsequent development of meningeal, vascular or parenchymatous lesions are implanted in the delicate nerve tissue early in the course of a luetic infection. Here, then, is the critical period for the application of therapeutic measures aimed for their eradication before irreparable pathological damage is done. The statement of Nacke that only a congenitally weakened brain is capable of developing paresis is open to grave doubt. Neisser's dictum that the spinal fluid should be examined in every case of lues before discontinuing treatment was never truer than it is today in the light of our clinical and pathological knowledge.

Estimations of the pressure of the cerebrospinal fluid have not met with any enthusiastic advocacy, nor have the results been reported sufficiently significant to attribute to this procedure any great diagnostic value. Obviously, the most accurate method of registering the pressure is by means of a manometer. Without such an instrument wide variations in pressure estimations occur due to the personal equation.

There are several well recognized factors which influence the rate of flow under normal conditions.

(1) The rate varies directly with the calibre of the needle.

(2) In the upright position the pressure is greater than in the recumbent position.

(3) The position of the needle in the subdural space is of importance in guarding against fallacious conclusions. Often a small blood clot, a piece of connective tissue or a part of the cauda equina may drift against the end of the needle, impeding the outflow of fluid.

(4) Another point worthy of mention is the rapidity of flow often noticed for the first few seconds, which later becomes slower and more uniform. This initial increase is due to a slight invagination of the theca surrounding the needle, thereby producing a moderate local constriction.

Summary.—(1) In the absence of a manometer the significance of pressure estimations may be enhanced by expressing them in numerical terms of rate of flow, as determined by a count of the number of drops per minute.

(2) For uniform results a needle of known caliber should be used for all work, the position of the patient should be the same, and sufficient experience is required to make certain that there is no mechanical obstruction to the tip of the needle.

(3) The first few drops should not be counted because of the increased pressure frequently caused by an invagination of the theca around the needle producing a local constriction.

(4) There is a tendency for the pressure to be increased in all forms of luetic involvement. It is more frequent in advanced paresis than in other diseases of luetic origin.

(5) The amount of fluid removed should be governed by the pressure (4-14 c.c.).

(6) Symptoms are relieved by puncture alone in many cases with increased pressure, notably paresis.

(7) In cerebral tumor cases only a small amount of fluid should be removed (4 c.c.).

Cell Counts.—Because of a rapid disintegration of the cellular elements of the spinal fluid it is necessary that the cell count be made within half an hour unless a preservative is mixed with the spinal fluid. One-half per cent. acetic acid preserves the leucocytes very well. The most satisfactory method is that by which the spinal fluid is diluted with a methyl violet staining fluid in a white blood pipette and one drop counted with a Fuchs-Rosenthal counting chamber.

The cells are increased in paresis, tabes, cerebrospinal syphilis, anterior poliomyelitis, meningitis and other organic lesions of the central nervous system. Syphilitic diseases, anterior poliomyelitis and tuberculous meningitis are accompanied by an increase in the lymphocytes, whereas in epidemic cerebrospinal and other meningitides the polymorphonuclear leucocytes predominate.

The highest counts are in fluids from cerebrospinal luetics. In this type the cells may reach 950. In paresis the count may vary from normal to 350. Tabo-paresis has a tendency towards a greater degree of pleocytosis than paresis, counts of 100 to 200 being more frequent than in the latter disease. In tabes dorsalis the counts vary from borderline to 135. The highest counts, of course, occur in active and progressive cases and lower counts in quiescent cases. In all types of pure tabes, normal counts occur in about 20 per cent. of the cases and normal and borderline counts in 40 per cent. of the cases.

Globulin.—An excess of globulin in itself only signifies an organic lesion of the central nervous system and has no value for differential diagnosis except when considered in relation to the other laboratory findings. The globulin is increased in 84 per cent. of all spinal fluids from cases of syphilis. In syphilis without symptoms pointing to the central nervous system there was an increase in 73 per cent., whereas in syphilis of the cerebrospinal axis (paresis, tabes, tabo-paresis and the cerebrospinal types) there was a globulin excess in 87 per cent.

For the estimation of a globulin excess the following arbitrary system of interpreting the degree is employed:

Trace indicates—very slight increase.
One-plus indicates—slight increase.
Two-plus indicates—moderate increase.
Three-plus indicates—marked increase.
Four-plus indicates—very great increase.

The colloidal gold test must be carried out with strict precautions as to technique. Strict attention to all details of preparation of reagents, distilled water and glassware is imperative, else the reaction is valueless. For the detection of the very early stages of paresis with but few symptoms it is the most valuable test we possess. Unless test tubes are shaken immediately after the addition of the colloidal gold solution to the dilutions of cerebrospinal fluid, atypical reactions characterized by a pale zone at the top of the tubes are obtained. Paretic fluids yield the greatest number of reactions. The intensity of the reaction may be temporarily increased after treatment. Although paresis cannot be diagnosed with certainty from a positive Type 1 curve, its absence can be assured in 99 to 100 per cent. of cases, the spinal fluids from which give normal reactions, and in 95 per cent. of those showing no greater change than a 3.

Wassermann Test.—The Wassermann reaction does not in itself furnish complete information upon which to base a diagnosis. If, however, one could use but one test, this could less be dispensed with than any of the other tests.

A positive complement fixation reaction in the spinal fluid establishes a diagnosis of luetic involvement of some of the structures of the cerebrospinal axis. Such lesion may be meningeal, parenchymatous or vascular. Its pathology may be only inflammatory or it may be of the type of specific granulomatous infiltration (gumma).

Proper diagnosis can only be arrived at by supplementing the clinical observations with the results of the laboratory. Further, a report merely of a positive Wassermann is insufficient. One must know what antigens were employed and in what amounts the spinal fluid was used. Cholesterin antigens give 11 per cent. more positive reactions in the blood than do simple alcoholic extracts of acetone-insoluble lipoidal antigens. In spinal fluids from all types of lues, 12 per cent. more positive reactions are obtained with a cholesterin than with any other antigens (Cornwall) and this result is observed more frequently in the cerebrospinal type of lesion than in others and is very frequent in treated cases.

It is necessary to know in what amounts the spinal fluid is used, because reactions that are negative with 1 c.c. or less of spinal fluid may be positive with larger amounts. With 2 c.c. of spinal fluid a positive Wassermann may be detected in all types of

luetic lesions in 7 per cent. of cases that would otherwise be considered negative. This difference is observed more frequently in tabes and tabo-paresis than in other types of lesions.

Except when treatment is contraindicated for other reasons, a negative reaction should be striven for with 2 c.c. of spinal fluid and a cholesterin antigen before its discontinuance.

In no case does a negative Wassermann reaction in either blood or spinal fluid negate the presence of lues except together with other negative findings in the serology, history and physical examination. When lues is suspected in such cases, antispecific treatment with mercury or salvarsan should be instituted as a provocative measure.

In advanced paresis the Wassermann is positive in both blood and spinal fluid in 100 per cent. of cases.

A positive Wassermann only means syphilis, but does not tell the type.

No case of syphilis should be pronounced cured without a lumbar puncture.—*The Urologic and Cutaneous Review.*

Diagnosis of Nervous Syphilis.—J. H. Lloyd (*Med. Rev. of Reviews*) warns that mere laboratory reports should not determine the diagnosis of syphilis of the nervous system, or against such a diagnosis. Monosymptomatic syphilis is a possibility, especially when the pupils alone are affected; early abolition of the knee jerks and especially the Achilles jerks, with dysuria and slight sensory changes, are important. The Argyll-Robertson pupil is not confined to the so-called parasyphilitic group (tabes and paresis), but is occasionally seen in ordinary cerebrospinal syphilis. The acoustic nerve especially should be tested as it is sometimes early affected.—*The Urologic and Cutaneous Review.*

EXPERIMENTAL NEUROLOGY.

Experimental Hydrocephalus:—Walter E. Dandy, *Annals of Surgery*, Augus, 1919, presents an elaborate study upon the etiology and pathology of hydrocephalus from data obtained from extensive observations made with precise experimental methods which are fully explained.

As a result he arrives at the following conclusion:

Hydrocephalus has been produced by placing an obstruction in the aqueduct of Sylvius. Dilatation of the third and both lateral ventricles results.

One foramen of Monro has been occluded; this is followed by a unilateral hydrocephalus.

If the choroid plexus of one lateral ventricle is completely removed at the time the foramen of Monro is occluded, not only does no dilatation occur, but the entire lateral ventricle collapses. This is the only absolute proof that the cerebrospinal fluid is formed from the choroid plexus. At the same time it proves that the ependyma does not secrete cerebrospinal fluid.

If the choroid plexus of both lateral ventricles is removed and an obstruction is placed in the aqueduct of Sylvius, hydrocephalus still results in the third and both lateral ventricles, but at a reduced rate. The fluid forms from the choroid plexus of the third ventricle, but cannot escape into the subarachnoid space.

Cerebrospinal fluid forms in all the cerebral ventricles. It is absorbed almost entirely in the subarachnoid space. The sole communication between the ventricular system and the subarachnoid space is through the foramina of Luschka and the median foramen of Magendie.

The phenolsulphonephthalein test will prove conclusively whether the foramina

of Luschka and Magendie are open or closed. Closure of these foramina invariably causes hydrocephalus.

Hydrocephalus follows ligation of the vena magna Galeni if the ligature is placed at the origin of this vein. Ligatures beyond or in the sinus rectus have no effect because there is sufficient venous collateral circulation.

The communicating type of hydrocephalus has been produced in dogs by a perimesencephalic band of gauze, saturated in an irritant which induces adhesions. This obstruction prevents cerbrospinal fluid from reaching the cerebral subarachnoid space where most of the cerebrospinal fluid is absorbed. The resultant diminished absorption of fluid results from hydrocephalus.

Hydrocephalus follows ligation of the great vein of Galen because of an overproduction of cerebrospinal fluid. In other types of hydrocephalus, both obstructive and communicating, the accumulation of fluid is due to a diminished absorption of cerebrospinal fluid.

NEURO-DIAGNOSIS.

THE EYE AS AN AID IN DIAGNOSIS AND LOCALIZATION OF INTRACRANIAL LESIONS:—Louis N. West, *Charlotte Medical Journal*, August, 1919, writes that in the examination of patients with intracranial lesions or disease it is necessary to determine the following points:

(1) The sensibility of the cornea; (2) the size, shape and reaction of the pupil; (3) the acuteness of vision and the field of vision; (4) the fundus of the eye and of blood vessels, optic disc as regards to atrophy; (5) the condition of the muscles of the eye, nystragmus, squint or paralysis, and (6) anomolies of the eye.

Cornea.—Disturbances of sensation in the cornea do not manifest themselves by any special objective or subjective phenomena. The normal cornea is not sensitive to pressure and is sensitive only to heat in the peripheral portions (not in the center). Its entire surface is sensitive to pain. The sensibility is tested most conveniently by touching the cornea with a piece of absorbent cotton, care being taken to eliminate fear from actual pain. In normal conditions when the cornea is touched the eye will wink and the patient give evidence of some discomfort. In other cases the wink is absent, indicating a partial or complete anaesthesia. After section of the ophthalmic division of the fifth nerve, and after installation of cocaine, there is complete anaesthesia. Neuro-paralytic Keratitis is a condition that is frequently the cause of anaesthesia of the cornea, and this is due to a lesion close to the gasserian ganglion. Anaesthesia is sometimes present in Tabes, but is always accompanied by cutaneous numbness of the region supplied by the Trigeminus. If the anaesthesia is unilateral, without any diminished facial sensation, it may mean a tumor of the cerebellum on the same side. In such cases there will be coarse nystagmus to the same side. Diminished sensation of one or both cornea may be a sign of hysteria when corroborating evidences are found. Diminished sensation of one cornea means a lesion of the fifth nerve of that side, a lesion of the cerebellum of that side compressing the fibres of the fifth nerve, or hysteria.

Pupil.—Normal size 2¾ to 4¾ mm. Only in natural sleep is the pupil in repose, and it is then strongly contracted. Abnormal contraction of the pupil is the result either of excitation of the third nerve, spasm of the sphincter muscle, or of enervation or paralysis of the sympathetic. Paralysis of the cervical sympathetics is always accompanied by myosis, but the pupils react to light and eserine, and will dilate with atropine. Associated symptoms are ptosis and anaesthesia of the fifth nerve. There is no general disease so frequently the cause of myosis as syphilis, notably the cerebrospinal form, Tabes and General Paresis. It occurs in the first

stage of Tabes and even to a high degree after complete tabetic optic atrophy, whereas in other forms of optic atrophy there is ordinarily mydriasis. Tabetic myosis resists the action of cocaine and atropine.

Mydriasis.—Relative dilation of the pupil, like myosis, may be due to functional causes or to excitation or irritation of the cervical sympathetics, by intracranial or cervical lesion, or through the influence of psychic and sensory phenomena and to paralysis of the sphincter. In functional mydriasis the light and convergence reactions are present. Paralytic mydriasis is really paralysis of the sphincter of the pupil, and is the effect of a drug or disease. Meningeal irritation may cause a spasm of the sphincter muscles with contraction of both pupils. Compression of the nucleus of the nerve for the sphincter muscles or of the fibres in the third nerve trunk will cause dilation of the pupil, but since the nucleus of the sphincter and that for accommodation lie close together, there will occur paralysis of accommodation, and the patient will not be able to see near objects clearly. Usually the light reaction is also absent. Ophthalmoplegia interni occurring in one eye and lasting a long time is almost always due to luetic nuclear lesion. Argyll-Robertson pupil is a condition in which light reflex is lost and convergence is present, and is found to be associated with anomolies of the knee jerk, etc. A non-luetic tumor in the region of the third ventricle may produce Argyll-Robertson pupil. It is, however, almost without exception a symptom of syphilis of the nervous system. In cortical blindness from circulatory or other lesion of the occipital lobe, the pupils retain their normal diameter and their reaction to light. Blindness resulting from lesions that are not cortical has for effect Mydriasis with absence of light reflex. In acute meningitis, septic sinus thrombosis, brain abscess, bilateral mydriasis is not rare. All trauma, neoplasms and inflammations capable of implicating the third nerve anywhere along its course from the nucleus to the globe may be a cause of mydriasis contrary to the former conception, which was to the effect that the lesion in question must produce complete paralysis of the third nerve. They may be limited to the pupillary or accommodative fibres.

Loss of consensual reaction indicates a peripheral lesion in the nervous apparatus for innervation of the pupil.

Field of Vision.—Choked disc as a rule causes contraction of form and color field, concentric or sector-like or the color field may be reversed, and as a rule a rather rapid loss of the nasal field—all usually late phenomenon, and indicates nerve fibre degeneration. The reversal of the color field is a frequent symptom of Hysteria, and Hysteria in turn is often associated with patients suffering from brain tumor.

Central scotomata is chiefly due to affections of the papillo-macular bundle. Central scotomata of one eye due to pressure is found with frontal lobe tumors of the same side and also with disease of the posterior ethmoid cells.

Fundus of Eye.—The ophthalmoscopic changes in the nerve head of neurological interest are atrophies and edema. Simple atrophy is usually a symptom of early or late of Tabes.

The papilledema of brain tumor is generally regarded as a purely mechanical character coming on in both eyes at about the same time. The early or late appearance of papilledema depends much upon the situation of the tumor. A tumor blocking the passage between the third and fourth ventricle will cause early choked disc and decompression here will not give relief. Tumors distant from the third ventricle do not block the passage until late, and decompression is indicated. If the tumor cannot be located and the optic disc shows signs of edema with failing vision a decompression should be done at once in order to save vision and with the hopes that later the tumor will give some localization signs and then be removed. If the vision has been reduced through atrophy of the nerve, further atrophy may be checked, but the lost vision will not return.

Optic atrophy and pallor both may affect only a sector of the disc, usually the lower temporal portion. Temporal pallor is a symptom of Multiple Sclerosis, Alcohol and Tobacco Poisoning, though it does not necessarily give any indication of the gravity of the disease.

Other causes of atrophy beside toxic are mostly mechanical.

The chief causes of secondary atrophy vary in frequency with the age of the subject; in childhood it is due chiefly to Neuro-Retinitis secondary to meningeal infections, pneumococcus infections and to suppuration of the middle ear, and these causes are often bi-lateral. In adults syphilis stands first.

True, simple, inflammatory or infectious papillitis is often monolateral when caused by local lesions of the orbit.

The great majority of cases of choked disc are caused by tumors of the brain, and of all symptoms which brain tumor presents, choked disc is most nearly pathognomonic. Less often with tuberculous growths, the nature of the tubercle is to replace, not displace tissue. The location of a tumor is more influential in causing choked disc than its size; thus, it is almost constant in tumors of the Cerebellum and Corpora Quadragemini, but less frequent in tumors of the Corpus Callosum and convexity. Choked disc from the brain tumor usually is bilateral, but the degree of swelling or stage of progress may vary widely in the two eyes, when unilateral, it may occur in either eye, but is more frequent on the side of the tumor. Tumors situated far forward in the brain are more apt to cause choked disc on the same side than when situated far back, but this is not always the case. In unilateral papilledema the possibility of a growth which involves one nerve must be borne in mind.

Ocular Palsies.—The ocular palsies of central origin are largely syphilitic. This is also true as to most of the neoplasms that figure in the etiology of deviation of the globe.

Peripheral paralysis is divided into extra-cranial and intra-cranial. Paralysis strictly limited to one of the muscles having its own individual nerve, warrants the supposition that the lesion is peripheral, as syphilis or fracture of the base of the brain, infections of the middle ear, or extra cranial lesions or trauma. When all the muscles innovated by the third nerve are paralyzed, it is equally probable that the lesion is peripheral. If the inferior oblique, the sphincter of the pupil and ciliary muscles are alone paralyzed, one may conclude that the lesion is orbital. Paralysis of all the muscles of the eye, both external and internal (total ophthalmoplegia) may be set down as peripheral, i. e., orbital or basilar.

Nuclear paralyses of oculo-motor are, in consequence of the great extent of the nucleus, seldom total. The sphincter pupilla and ciliary muscle generally remain unaffected. A nuclear lesion of the abducens causes not isolated paralysis of the ext. rectus of same side, but conjugate paralysis affecting the rectus externus on the side of the lesion and the rectus internus of other eye, the result being conjugate deviation from the side of the lesion accompanied by facial paralysis of peripheral type, owing to the proximity as the nerve turns around the sixth nucleus.

In infra-nuclear paralysis of the third nerve the sphincter and ciliary muscle practically never escape, as the nerves are in close contiguity with those of the ext. ocular. Infra-nuclear abducens lesion causes isolated paralysis of ext, rectus, not conjugate paralysis of that and rectus of other eye. With Gummata, tumors or meningitis in the neighborhood of the third nerve, ptosis is usually the first symptom. Fractures of the base involve most frequently the abducens, which occupies a very exposed position. Irritative lesions near abducens nucleus may cause nystagmus and in rare cases conjugate deviation, the deviation being to the side of the irritation.

In lesions of the cerebral peduncles, besides the pyramidal lesion, which causes a complete hemiplegia of the opposite side, there is involvement of the roots of the

third, which leads to oculo-motor paralysis on the same side as the lesion (Weber's syndrome).

Lesions of the Cortex of Cuneus.—A unilateral lesion has homonymous lateral hemianopsia of the opposite side with normal pupillary reaction. If lesion is bilateral as in tumors of falx cerebri or toxic disturbances, as in uremia, there is cortical blindness with the pupillary reaction unaffected.

Ptosis.—Congenital ptosis is, as a rule, bilateral and partial, and is usually accompanied by other ocular anomalies such as squint, nystagmus, coloboma of the nerve tract, opacities of lense, etc. Not infrequently there is undevelopment of the entire organism.

Th anatomical causes are usually (1) Absence of the nerve center, or of the conducting neurones. Injury at birth may cause a traumatic ptosis by direct injury to nerve. (2) Arrested development of the levator.

Acquired ptosis is more important and is either peripheral or central. Among the peripheral causes are tumors, hemorrhage, inflammation and abscess in the orbit or from accessory senses.

A lesion involving the nucleus of the third nerve or immediately surrounding it constitutes the central cause of paralytic ptosis. Of the primary causes of this form of ptosis whether peripheral or central, syphilis stands at the head. Syphilitic ptosis may appear three weeks or 30 years after the initial lesion, and is nearly always accompanied by paralysis of other branches of the third nerve, and is at times seen in connection with other phases of the disease, such as tabes, etc.

Isolated paralysis of the levator branch of the third nerve is strongly suggestive of a central lesion. Other affection of which ptosis may some time become a symptom are syringomyelia, Basedow's disease, cerebral tumor, multiple neuritis, simple senility and some poisons, etc.

Nystagmus.—When nystagmus dates back to infancy it has no great diagnostic significance, but nystagmus coming on later in life is always significant. It may come with the most diverse intra-cranial condition, but certain types have definite significance.

The disease of the nervous system in which nystagmus occurs are Multiple Sclerosis, Friedreich's Ataxia, Alcoholism, Syringo-Myelia, Brain Tumor, Cerebral Hemorrhage and Softening.

There may be a nystagmus when a muscle of the eye is about to be paralyzed or when it is recovering from a paralysis, and here the twitch is in the direction of the muscle affected. Marked nystagmus on lateral fixation may mean a pontine lesion. Nystagmus, course and slow to one side, and fine and rapid to the other, may mean a cerebellar lesion on the side of the course movement.

NEURO-ETIOLOGY.

ANGIONEUROTIC EDEMA: A PRELIMINARY REPORT:—Charles R. Austrian, *Southern Medical Journal*, contends that angioneurotic edema is a symptom and not a disease and that in those cases in which the immediate cause of this manifestation can be discovered and removed, the symptom can be relieved.

Angioneurotic edema is characterized clinically by the occurrence, often periodic, of transient local swellings more or less circumscribed in the skin, mucous or synovial membranes. In typical cases they develop abruptly, are pale, painless, without evidences of inflammation and are accompanied by disturbances the nature of which depends upon the site of the reaction. Eosinophilia is commonly present and other evidences of vagotonia are more or less constantly found, i. e., erythemata, cold

sweating palms, salivation, epiphora, increased gastric secretion, spastic constipation, pollakiuria, etc. In some cases there is a personal or a familial history of eczema, urticaria, hay fever or asthma. In many there is an associated psychoneurosis or a neuropathic tendency and occasionally purpura, Meniere's disease or migraine are met with in the same individual. Often there seems to be a family tendency to the syndrome. The condition occurs at all ages, but develops most often in adult life; more frequently in men than in women and especially among the financially well-to-do.

The cause of the condition is variously attributed to a vasomotor neurosis with suddenly increased local permeability of the vessels (Quincke); to a rise of lymphatic pressure due to the presence of an excess of lymphogogue in the circulation (Heidenhain, Lodor), or to a vasomotor or angioneural ataxia dependent upon disturbances of the autonomic nervous system (Solis-Conen), but the etiology of such states has not been discovered nor has the wherefore of its occasional familial transmission been given.

From a limited study of this condition through observation of cases over long periods and the use of intradermic injections of extracts of various proteins, as well as upon the basis of other established facts, angioneurotic edema is considered one manifestation of at least several types of disorder, which the author subdivides on the basis of the proximate cause into the following types:

1. Allergic or anaphylactoid.
2. Infections.
3. Endocrine.
4. Thermic.
5. Metabolic.
6. Idiopathic.

Type 1 is styled allergic because of the fact that in the patients included in it specific sensitization can be demonstrated by:

(a) The development of the symptom-complex when the protein or proteins to which the individual is sensitive are ingested;

(b) The demonstration of a specific reaction when the particular protein is applied dermally or intradermally; and

(c) The abeyance of the symptom when the offending protein is withheld.

Type 2 is termed infectious on less secure ground. However, the fact that a local focus of infection is present and that the removal of the infection leads to a subsidence of the symptom is very suggestive. Doubtless the infectious group is really a sub-group of Type 1 and the sequence of events is probably infection, sensitization with the parenterally introduced protein of the invading organism or with the interaction products formed as a result of infection, and subsequent intoxication, with the efflorescence of symptoms. Securely to establish these cases as allergic it is necessary to demonstrate at least a local sensitiveness to the protein of the offending organism, a test the need of which was not foreseen in the three cases of this type studied.

Type 3, the endocrine group, has been recognized by many observers. The frequent association of other evidence of vasomotor neurosis and the occasional occurrence of angioneurotic edema in Grave's disease are well known. The appearance of the syndrome at the climacteric, at puberty and in relation with the menstrual periods suggest the influence of the internal secretion of the ovary. Finally, the disappearance of the symptom in hyperthyroidism following operation and, in some (2) cases, at the menopause after the prolonged administration of large doses of ovarian extract, is confirmatory evidence and indicates that hyper-function of the thyroid gland and hypo-function of the ovaries (internal secretion) are more than casually related to the development of Quincke's syndrome. Doubtless the influence of the other

ductless glands is of importance as well. Inasmuch as there is a familial tendency to dysfunction of these glands as well as to the development of angioneurotic edema, it would be interesting to study cases of familial angioneurotic edema for evidences of endocrine disease with the idea of testing the hypothesis that the familial types of the syndrome are of endocrine origin, a theory supported by the study of Hertoghe.

The thermic group, Type 4, includes the rare cases in which the typical syndrome follows exposure to cold. Cases of this type are described in the literature, but no satisfactory explanation of their origin is given.

The metabolic group, Type 5, comprises the cases in which the appearance of the symptom-complex is dependent upon a disorder of metabolism. Miller and Pepper (*Arch. Int. Med.*, 1916, xviii, 551) studied a patient with angioneurotic edema in whom during the attacks of swelling there was a retention of nitrogen, a reduced elimination of sodium chlorid during the three or four days preceding the maximum reaction, and in whom a low chlorid intake had a beneficial effect on the attacks of edema. The author observed one patient in whom there is a retention of sodium chlorid preceding the appearance of edematous swellings and who is symptom-free on a reduced intake of salt. The studies in this case, however, are incomplete and it is not yet certain whether or not an impaired renal function may play a role in this case as admittedly it may in the case reported by Miller and Pepper.

The idiopathic group, Type 6, is really no group at all, but includes those cases in whom no proximate cause for the symptom has been found. Further study will steadily diminish the number of patients so classified, registering them as members of one of the classes already recognized or of groups as yet undifferentiated. These patients have no demonstrable foci of infection and show no specific allergy. This group includes, among others, individuals in whom attempts to determine the existence of sensitization by intradermic tests, elicit reaction to many or to all of the test solutions. These reactions are non-specific, the result of trauma, and are simply evidence of an angioneurosis. In such patients it is fallacious to conclude that there is general sensitization with numerous proteins and to withdraw from the diet the many substances incriminated by the tests. Of course, such cases are to be differentiated from those in which there may exist an idiosyncrasy (in the sense of allergy) to several or more proteins, and this may be done by comparing the suggestive reaction with that developing about the site of the control injection, or, in the case of cutaneous tests, about the simple abrasion of the skin. Each individual with angioneurotic edema is a problem unto himself and only careful, often elaborate study will determine to which type he belongs.

HYPOPHYSARY INFANTILISM AND SYPHILIS:—Lereboulet and Mouzon *Revue de Neurologie*, suggests that syphilis should be kept in mind—as was emphasized by the authors on the basis of a personal case—among the causes of hypophysary infantilism. The specific infection may act through the intermediation of osseous lesions of the sella turcica, or it may reach the hypophysis through inflammatory meningeal processes, which was probably the mechanism in the authors' case, in a male subject aged 23 years who had the appearance of a child. He was brought to the hospital by his mother for visual disturbances and retarded development. The condition was found to be one of practically pure infantilism due to arrested development with but few traces of obesity. The genital organs were found to be not only infantile, but atrophic, the right testicle having the size of a pea, while the left was imperceptible. The pubic region was absolutely smooth and hairless. The patient appeared to be about 13 years old in stature and facial expression. He presented no sign of dysthyroidism and no evidence of feeble-mindedness. There was bilateral

optic atrophy and left temporal hemianopsia. Notwithstanding the absence of well-defined urinary disturbances and the negative outcome of radiography, there could be but little doubt as to the hypophyseal origin of the symptoms presented by the patient.—*Am. Journ. of Syphilis.*

NEURO-PATHOLOGY.

THE HISTOGENESIS OF MULTIPLE SCLEROSIS:—Thoephil Klingman, *Arch. of Neurology and Psychiatry*, January and February, 1919, reports four cases of multiple sclerosis of the usual cerebro-spinal type, which came to autopsy, with exhaustive histo-pathologic findings. One patient died of mastoiditis. Another patient died of pneumonia, one died in a convulsion and one from exhaustion following a number of epileptiform seizures. Their ages were 38, 44, 49 and 54 years. The average duration of the disease in these cases was 10 years. All of the cases showed at necropsy a general adenitis with rather marked glandular enlargement in the bronchi and mesentery. One had a healed tuberculous lesion in the left lung.

The method of examination of the brain and spinal cord of the different cases was uniform and the histologic observations were made in preparations of diffuse and differential stains. The demyelinated areas are of various size and form, though mostly round or oval.

In the ventral and dorsal spinal nerve roots the areas are more irregular than elsewhere, though sometimes round or ovoid. Some of the areas have sharp cut margins, others show a gradual transition from the unstained to the normally stained tissue. In the spinal cord the areas at the periphery, especially at the ventral and dorsal root-entry, are wedge-shaped. The base of the wedge is subpial, the apex extends into the medullary substance. The areas in the posterior columns are elongated oval shape involving either the posterior median septum or the paramedian septum. Isolated round demyelinated areas occur in the ventral and dorsal horns. These have a very abrupt border. In the central gray substance there are sharply circumscribed round areas more deeply stained than the surrounding myelin sheaths; these areas occur also in the white substance between the posterior horns and in the ventral and dorsal nerve-roots and in the pia in these regions. In the lateral columns large irregular or wedge-shaped demyelinated areas are present and within these are denser areas usually round or ovoid, only their greater density differentiates them from the surrounding sclerosed tissue.

In the medulla oblongata, pons, cerebral peduncles, and cerebellum the areas are round or oval, and the confluent areas are here also apparent. The subpial areas are wedge-shaped with broad base peripheralward. The areas extend into the adjoining tissue in the form of broad isolated processes in which a central vessel can be seen. Such extensions from the periventricular tissue involve the cranial nuclei.

Around the posterior and anterior horns of the lateral ventricles and also in the descending horns of the lateral ventricles the sclerosis assumed the form of long finger-like extensions from the adjoining white matter. In the medullary rays there are also numerous small, round and oval foci.

In the optic thalamus, the caudate and lenticular nucleus, the areas are frequently round, very numerous and small, though sometimes confluent. Within the confluent areas small, round denser areas are apparent, which indicate the original foci. Symmetrical involvement of the basal ganglia is strikingly evident.

The internal capsule, the external capsule and claustrum, also the convolutions of the island of Reil, show quite round, isolated areas of varying size and a striking

symmetry of the two sides. The sieve-like areas around the branches of the lenticulostriate and striothalamic vessels are marked and constant in all of the cases.

It appears that not only these areas, but all of the demyelinated areas occur within the radius of a blood-vessel as far as that territory can be determined. The primary sclerosed area is invariably within the vessel zone.

In the cerebral cortex the demyelinated areas are more variable in size and shape than elsewhere. Some of the areas appear as extensions from the white matter into the gray. The shape of these extensions seems to conform to the radiations of the nerve-fibers and appear as elongated sometimes curved or pointed areas. Numerous round or ovoid areas can be made out entirely within the cortex. They may be situated in the tangential layer or in the supraradial or intraradial net-work. In some of the areas a central vessel was apparent, in others numerous capillary vessels in various positions are seen within them.

Some of the areas appear to spread from the surface inward. Such areas extending from the surface into the convolution are often wedge-shaped, sometimes in the form of an irregularly curved process with its convexity to the surface. The outline of these areas is well defined. Some of them extend as far as the subcortical white matter.

Confluent areas with complete demyelination of a whole convolution and sometimes extending around a sulcus to another convolution was observed.

In the cerebellum, the medullary core is uniformly involved in all of the cases. The demyelinated areas are small, mostly round; the larger ones consist of several confluent areas. The cortex shares in this involvement. Small, round areas are found in almost every section of the cerebellar cortex. None of the areas appear to extend from the cortex to the medullary core, or vice versa. A remarkable symmetry in the cortical areas is also here indicated.

It is apparent that the demyelinated areas are distributed over the entire central nervous system, that they are round or oval, or modifications of these forms when they originate in the medullary substance, cortex or gray substance of the cord, while the subpial areas and the areas in the pial septa are wedge-shaped. In the confluent areas the original round or ovoid focus can be differentiated.

NEURO-SURGERY.

CERVICAL SYMPATHECTOMY AS A MEANS OF PERMANENT CURE OF FACIAL (TRIGEMINAL) NEURALGIA:—Pletch, *American Journal of Surgery*, May, 1919, observes that cervical sympathectomy is a promising means of curing this painful condition. He observes that it takes usually weeks or even months before a definite relief is noticeable from simply removing the cervical ganglion and branches given from it. Thus in the case of a Mexican peon who suffered from tic douloureux of the left hand, following a crushing injury, attempts to relieve pain by plunging the hand into boiling hot oil promptly produced a claw-hand, but did not relieve the pain. Later on he went to Mexico City and was operated on, linear scars demonstrating that operations had been performed on the median and ulnar nerves. This did not relieve the pain either. Later an operation was performed by a Mexican surgeon, which consisted of the exposure and injection with osmic acid of the individual branches of the axillary plexus. This also produced no relief. At this time he began to suffer from trifacial neuralgia.

A cervical sympathectomy was now performed with the view of relieving the facial neuralgia, in which the author succeeded in the space of between two and three months. In this case superficial and deep injections of alcohol were made at

the various trigeminal foramina. Jointly with the facial neuralgia the pain in the hand disappeared.

Leriche is quoted to the effect that by peripheral and periarterial sympathectomy certain neuralgias of the viscera were cured and that a causalgia of the median nerve was cured by resecting a portion of the sheath of the brachial artery.

Jacobsen is quoted, too, as having permanently cured sciatica by resection of a portion of the femoral artery, while Veyrassat claims to have cured a case of malperforans by a similar operation, which he calls periarterial sympathectomy.—*Therapeutic Gazette.*

NEURO-THERAPY.

AUTOSERUM INTRASPINAL TREATMENT OF CHOREA:—Brown, Smith and Phillips, in the *British Journal of Children's Diseases* for January-March, 1919, state that it is most essential that both tuberculosis and syphilis be excluded and that all drug therapy be suspended for at least five days previous to the injection of autoserum. Most serious results have been encountered when this latter point has not been observed. Drugs circulating in the blood-plasma have a much more potent effect when injected into the canal and serious results are thus obtained, particularly after the use of salicylates, when very toxic symptoms of salicylic acid poisoning have presented themselves.

In practically every instance the treatment was administered in the out-patient department, the patients returning home within an hour or two following the injection.

The first step consists in withdrawing about 50 Cc. of blood from the median basilic vein. In some instances an anesthetic is necessary, as the patient is often too nervous to keep still sufficiently long to obtain the amount of blood required. Ethyl chloride is the anesthetic employed. It is important to have the tourniquet applied just tight enough to impede the arterial flow; of course, one soon empties the arm of the venous blood and no more can be obtained until the tourniquet is released. A good plan in this connection is to use a blood-pressure band on the arm and have it inflated to about two-thirds the blood-pressure. The blood is received into three sterile test-tubes, the rubber tubing and needle having been previously sterilized and held so that the opening in the test-tube is protected from contamination by a piece of sterile gauze wrapped about the rubber tubing down to its point of entrance into the tube-test, the gauze from there on being held about the test-tube. The tubes are stoppered with sterile plugs and set aside for a few minutes to allow the blood to clot. Before putting in the centrifuge a sterile platinum loop is run down inside each tube to separate the clot from the test-tube in order to obtain the greatest amount of serum possible. The test-tubes are then put in the centrifuge for 30 to 40 minutes. At the end of that time the serum is drawn up in a sterile pipette, emptied into a sterile test-tube and put in the incubator to keep at the proper temperature for injection. At present they are omitting this, trusting to their technique to keep the serum sterile. From 50 cc. of blood they obtain 20 to 25 cc. of serum. The preparation of the serum takes about one to one and a half hours. The patients come to the out-patient department about 9 a. m. and the serum is ready at 11 a. m.

The patient is prepared as for lumbar puncture. As they always administer an anesthetic, the patient is given no breakfast. The serum is drawn into a 20-cc. Record syringe, which fits the ordinary lumbar puncture needle. The patient is then anesthetized with ethyl chloride, the needle inserted, and about 20 to 25 cc. of spinal fluid withdrawn. The Record syringe is then attached and the serum slowly injected. This is the crucial step in the operation, as it is essential to give as much serum as possible without causing pressure symptoms. As one slowly injects the

serum, when sufficient has been injected one feels definite obstruction to the entrance of the serum. Further injection, after this resistance has been encountered, invariably results in marked pressure symptoms, such as vomiting, severe headache, elevation of the temperature, etc. An anesthetic is necessary to enable one to detect this sense of resistance. In their series of cases they have used on an average of 17 cc. of serum.

The patients are kept in the hospital for one to two hours to watch for pressure or heart symptoms. They are then sent home to bed one week, when they return to the hospital. In the interval the public health nurses visit them to see that instructions are carried out. Usually improvement follows in two or three days and has become stationary again by the end of the week, when they return to the hospital and another treatment is given.

Following the injection there may be a mild disturbance, such as slight rise of temperature, a slight stiffness of the neck, or increase in pulse-rate. These rapidly pass off. Nothing solid is given to eat for six to eight hours following the treatment.

In the discussion which followed their paper it was stated that in practically every instance there had been previous medical treatment given, with the usual indifferent and unsatisfactory results. In most cases there was a mild reaction in the form of vomiting and an occasional rise in temperature, and on only one occasion was the reaction of such a nature as to prevent the return of the patient to the clinic owing to parental objection. The withdrawal of an equal amount of fluid as serum injected did not appear to be necessary.

It occurred to them that failure to obtain satisfactory results and prompt reaction might be due to the lack of sufficient antibody production in the plasma. This seems to us quite within the limits of possibility, taking into consideration the individual varying susceptibility to disease.

The conclusions are as follows:

1. Autoserum therapy has been productive of infinitely more satisfactory results than any other form of therapy, a cure of 77 per cent of the cases being effected within three weeks' time.

2. The technique is so simple that it may be employed in any home or outpatient department under mild anesthesia.

3. With the observance of proper precautions the reactions are negligible.

4. There have so far been no recurrences in over a period of a year and a half, but more time is necessary in order to give a more certain decision on this point. —*Therapeutic Gazette.*

Hysteria in Armies—Methods of Cure:—Tom A. Williams, *Charlotte Medical Journal*, September, 1919, asserts that the whole treatment of hysterical manifestations depends upon one principle, the replacement of the patient's morbid mental attitude by a normal one; a re-conditioning, a substitution, a re-education to which the patient has to be persuaded.

The means of persuasion are innumerable. The most successful in the hands of one therapeutist are not necessarily those which should be employed by another. The choice depends far less upon the nature of the hysterical symptom, or even upon the nature of the patient's make-up, than upon the temperament of the therapeutist himself. Some men are most successful when they employ methods which are in reality pure suggestion; others are more successful if they use methods which make the patients suffer. Others again cure more cases when they are permitted to elaborate a systomatized re-education of the patient.

The methods which are scarcely more than direct affirmation and suggestion are only of utility during the whirl of the dressing station at the front, at a time when the man's belief that he is justified in reporting sick is not at all firm. The diagnosis

can be made swiftly and easily. To restore the patient's military capacity it suffices to assure him confidently that his trouble has disappeared and that there is no reason for its return.

The removal of hysterical symptoms by the infliction of suffering torpillage, is applicable to persevorators and simulators, rather than to the general hystericals. It is a method most readily employed by those physicians who have not the patience and the spirit of organization required for more systematic treatment. It is, of course, a very rapid method, saving a great deal of time for the doctor and providing a great economy of man power, in that a patient treated in this way can be restored to the service in less than a month, whereas a patient in whom the more moderate methods of influence and re-education are employed requires several months to become fit for service.

The severe and painful methods of treatment, however, are greatly restricted in utility unless they are employed throughout the army, unless the assurance that they will be employed is known to the soldiers, and unless their use is sustained by public opinion. When the chance of evading this treatment exists either because the patients know that the doctor dare not push it, or on account of fear of interference by political appeal, the treatment loses its authority and becomes a very painful ordeal for the doctor using it. Besides, not every man has the tenacity, the courage and the skill required for its utilization. Mere relentlessness does not suffice. The doctor must know when to cease the painful stimulation and invoke the patient's own will in the removal of his disability for intemperate zeal and bungling brutality inevitably produce a spirit of vindictiveness in those subjected to the treatment which has a detrimental effect upon the neurological services in general.

Thus, unless in thoroughly successful hands torpillage should never be attempted. Accordingly, it is necessary to have recourse to the method of gradual re-education. The principle utilized to effect the metamorphosis of the patient's mental attitude by this procedure is that of the building up of hopeful expectancy by giving of examples of cures and by other means calculated to create an atmosphere of confidence. The subject is fully gone into in my forthcoming book upon disorders of the nervous system in warfare.

TREATMENT OF WAR HEADACHE:—Rawling, *British Medical Journal*, says that these headaches usually date from the moment of recovery of consciousness and occur most severely in cases with intact skull of very small injuries, following frontal or temporal injuries, and after wounds in the region of the vertex. The headaches studied all followed gunshot wounds, concussion, fractured base, etc. In his opinion the headaches are due to some increase in intracranial pressure, in the great majority of cases to cerebral edema. Medical treatment should be tried in the form of rest in bed, dieting, drugs, and lumbar puncture, but in most cases will fail to give relief. Then resort should be had to trephining the skull with incision of the dura, the opening being made beneath the temporal muscle and not closed, but left so that the excess of cerebrospinal fluid can drain into the subtemporal tissues and be absorbed. This treatment is safe, simple and gives relief in the majority of cases.—*Charlotte Medical Journal.*

EXPERIENCES IN THE IMMEDIATE TREATMENT OF WAR NEUROSES:—Edward A. Strecker, *American Journal of Insanity*, July, 1919, outlines the following general plan of treatment: The initial and perhaps more important phase of the treatment was carried on at the triage or when the opportunity offered, at a more advanced point. The first step consisted of a brief interview and examination, during which the physician care-

fully refrained from the expression of any opinion, and even avoided too pertinent questions. What must have appeared to the patient as little more than a casual conversation with an interested listener had certain definite objects. It sought to gain, even if only in a very crude and elementary manner, a working idea of the type of individual at hand; roughly measured his intellectual grade; took cognizance of the symptomatic picture, especially noting those symptoms which bore the marks of incompletion; and gauged the amount of insight existing, or the possibilities of its development. The psychiatrist endeavored to emerge from this introductory meeting armed with information which would enable him to assume a telling and effective mental attitude toward his patient during the interview which was to follow. It was planned to leave the soldier in a state of expectancy, or at least curiosity concerning the procedure to be utilized.

The second phase of the treatment consisted of a careful consideration and elaboration of whatever history could be obtained, including more or less remote details, so that the physician got a clear conception of the mechanism which had been at work, and how it had been modified in each particular instance. In other words, mechanism was thought of not as applying to whole groups of cases, but as having a very personal significance. A very important point in the history was the trauma, the emotional crisis or the mental conflict which had precipitated the neurosis. This needed to be definitely located and emphasized in the mind of both patient and physician, as it was often the starting point for treatment.

The author notes, by way of illustration, that a tremor of the leg, which presented, among other symptoms in a soldier who was being examined, during a time when the sound of large naval guns were being discharged at short intervals, practically ceased when his field of attention was narrowly and sharply focused on what was being said and done by the examiner. He was held in this state of concentration during the report from one of the guns, and then his mental vision was rapidly switched to his leg and the explanation of what had occurred was quickly given. The tremor never recurred. The greater value of such incidents did not lie in the removal of an isolated symptom, but in the amount of confidence which the demonstration inspired.

The analysis of the emotional components was made largely for the possibility of locating favorable soil for the implantation of therapeutic seed. For example: A young lieutenant showed generalized tremors and a prominent fear reaction following the explosion of a shell in his vicinity. Struggling for existence in the presence of the dynamic emotion, fear was a feeling of shame, because some of his men had witnessed his breakdown and regret that he would have to forfeit a promotion for which he had been recommended. These two feelings, at first feeble, were connected, expanded and strengthened by every possible argument, made to occupy a prominent place in the emotional picture, and then finally their effect was reversed by convincing assurance of early recovery with a new chance to regain his former status. The officer went back to the treatment hospital with the beginning of a definite hope in his mind. He was able to take his place in the firing line in four days. In the so-called anxiety neuroses, and the like, something similar to the above, offered perhaps one of the best avenues of therapeutic access, after a careful exposition of the mechanism as it applied to the individual officer, or soldier, had been given and he had been made to mentally face his real difficulty. There is certainly little to be done along the lines of cold reasoning, however logical and incisive it might be. It has been well said that it is "the affective element entering into every idea which gives it its purposive and creative value." The more vivid the affective element is made, the better chance has the idea of surviving, taking root and bearing fruit.

The amount of insight present in a given case usually bears a relationship to the intellectual capacity; hence care is necessary in the explanation of the neurosis which is offered at the end of this seance, not to feed richer mental food than could be digested.

The most simple words are used with the caution of never saying anything which might create a locus of lessened resistance for future attacks. If time permits, an attempt is made at once to remove hysterical deprivations, such as deafness, blindness or aphonia.

A small percentage of soldiers could be returned to duty from the triage; the majority of them had to be evacuated to the treatment point, where they remained for an average of about four days.

A great number of cases which came to the triage could not be dealt with in exactly the manner described above. Some of them were chiefly physical problems. Such soldiers were sent to the treatment center as soon as possible, and hand in hand with bodily restoration went the idea of nipping in the bud any neurotic manifestations which were apt to appear in the presence of decidedly lowered inhibition. Severe concussion phenomena in the limited sense of actual "shell-shock" demanded careful observation and later probably evacuation to the rear. The state of consciousness in each case was in a measure an index for the stage of development the neurosis had reached.

The treatment hospital tried to be a place where the patient was sent after he had taken the first important step on the road to recovery. No one was sent there until a determined effort had been made to convince him that he could be cured. There was necessarily a constant and fairly large residuum of refractory cases, but these were not permitted to negative the atmosphere of optimism which existed. Although situated in the field within the range of artillery fire, and subject to the military necessity of moving at an hour's notice, it was possible to approximate suitable hospital conditions. The first difficulty which presented was the lack of nurses. The group of enlisted men selected had in the beginning nothing more than the doubtful merit of curiosity concerning the "shell-shocked" soldiers. Until it was possible to inculcate a certain degree of nursing morale, it was necessary to deal with them from the point of view of military discipline. Certain orders were given, and failure to obey them was considered a punishable infraction of a military command.

Classification was an important function of this hospital. There was an effort to keep the mild cases in one tent, the more severe in another, the physical problems separate, and the recovered awaiting return to the front apart from the others. Soldiers with obstinate symptoms were segregated.

The physical needs of the patients were constantly borne in mind, and hot, abundant meals were an important feature. Exercise, amusements and work were all utilized, not haphazardly, but with a certain object in mind.

PSYCHIATRY.

A Report of the Pathological Changes of the Brain in 162 Cases of Paresis:—Thomas B. Christian, *American Journ. of the Medical Sciences*, summarizes the pathological findings in 162 cases of paresis as follows:

Chronic leptomeningitis 100 per cent, chronic pachymeningitis 81, hydrops meningeus 72, cranial ependymal slcerosis 71, dilated cerebral lateral ventricles, 60, cerebral cortical atrophy 54, cerebral arteriosclerosis 43, cranial osteosclerosis 42, cystic chorioid plexuses 33, chronic internal hemorrhagic pachymeningitis 17, pachycephalitis 14, cerebral softening and edema 14, cerebral congestion 10, chronic external and internal adhesive leptomeningitis 8, dilated fourth ventricle 5, coherent cerebral hemispheres 4, softening of velum interpositum 3, small thrombotic lenticular softenings 3, cerebral edema and softening 2, cystic and cheesy degeneration of chorioid plexuses 2, general cerebral atrophy and sclerosis 2, thrombotic softening of lenticular nucleus close to the posterior limb of the internal capsule 2, old area of thrombotic softening of both caudate nuclei 2. Findings appearing only once in

the series are as follows: Congested and thickened velum interpositum and softened pituitary body, chronic adhesive pericranitis, dilated third ventricle, cerebral hemorrhage, dilated cerebral perivascular lymph space, cerebellar tumor, thrombotic softening of right caudate nucleus and part of anterior and posterior limbs of the internal capsule, calcification of falx cerebri, small perivascular cerebral and cerebellar softenings, tuberculoma of dura, old hemorrhage of the right caudate nucleus, thrombotic softening of the left putamen of the lenticular nucleus, thrombosis of the right anastomotic vein of Trolaid, cyst of the pia and arachnoid, softening of the left cerebellar hemisphere involving the lobus semilunaris, lobus posteroinferior, lobus quadrangularis from thrombosis of the left vertebral and of the left postero-inferior cerebral arteries, thrombotic softening of the posterior limb of the right internal capsule, calcified nodules of the left temporal pole, spindle-celled sarcoma of the right optic thalamus, absence of middle commissure of optic thalamus, small thrombotic cortical softenings of left cerebellum and right occipital lobes, anomalous anterior cerebral arteries, thrombosis of the right lateral and superior longitudinal sinus, thrombotic softening of the right lenticular nucleus and double optic atrophy, thrombotic softening of the left cerebellar white tracts. The microscopic findings were practically similar in the cases examined and consist of the following in general: Syphilitic perivascular round and plasma cell exudate, distortion of cerebral cortical layers, chronic ganglia cell degenerative changes and cerebral gliosis, acute and chronic degenerative ganglia cell changes with atrophy, endarteritis and pericarditis.—*Amer. Jour. of Syphilis.*

General Paralysis and the War:—Kahn, *Journal de Medecine et de Chirurgie Pratiques*, 1919, vol. xc, p. 197, concludes that the war has been without influence on the frequency of this affection, but that the interval of latency may have been shortened, while in some cases the course is accelerated. Points which may be determined in a few years relate to the percentage of cases of paresis in cases of syphilis which have developed during the war. Other subjects of interest are presence or absence of a special strain of spirochete, early meningitis and its influence on the development of paresis and the possibility that the meningo-cortical region is an area of least resistance. The meningoencephalitis of syphilis has no relation to any other state which induces dementia, and produces so-called general paralysis. The criteria here include bacteriology and the clinical and biological resources. Traumatisms, exhaustion and emotional states are not necessary for the production of the affection.—*American Journal of Syphilis.*

BOOK REVIEWS.

THE DON QUIXOTE OF PSYCHIATRY.—By Victor Robinson, Historico-Medical Press, Publishers, 206 Broadway, New York City.

If this biography—classed by the publisher as a medico-historical work—of "the Don Quixote of Psychiatry," alias Dr. S. V. Clevenger, is, as stated by the author, intended to direct attention "to atrocities, continued until this day against the most helpless of human beings," it has a most commendable object, but it is difficult to understand how the author reconciles his expressed purpose with the satirizing—expressed mildly—of so many eminent members of the medical profession, most of whom have crossed the Great Divide, thus doing violence to that generally heeded maxim: "*Mortuis non conviciandum et de mortuis non nisi bonum*"—the dead cannot defend themselves, therefore speak well of the death.

The reviewer believes he can appreciate the martyrdom of the worthy Dr. Clevenger in his personal sacrifice for high ideals so graphically depicted by the author, but he cannot grasp the import of the accompanying mosaic of heterogenous "medical history"(?).

The work recalls Mark Twain's story of Horace Greeley shooting (at the) Buffaloes—it amused Horace and did not harm the buffaloes.

The cynic and gossip will find the work appetizing, if not satisfying.

D. S. B.

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Bayard Holmes, M. D.

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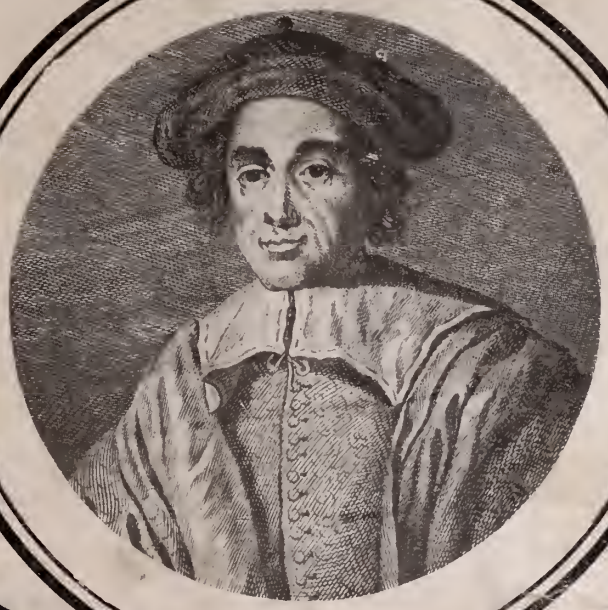

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A STUDY OF THE PROBLEM OF THE SO-CALLED DEFECTIVE DELINQUENTS AND WHAT HAS BEEN DONE IN MASSACHUSETTS.

By

L. VERNON BRIGGS, M. D., Boston, Mass.

THE term "defective delinquent" originated with a Commission appointed under Chapter 59 of the Acts of 1910 to study and report on the question of the increase of Criminals, Mental Defectives, Epileptics and Degenerates. This Commission, appointed by Governor ————, consisted of:

Dr. Walter E. Fernald, Supt., Mass. School for the Feeble-Minded;
Capt. Hollis M. Blackstone, Supt. of the State Farm;
Dr. Everett Flood, Supt., Monson State Hospital;
Mr. Benjamin F. Bridges, Warden, Mass. State Prison, Charlestown;
Dr. Ernest V. Scribner, Supt., Worcester State Hospital.

This Committee, in its investigations, found a class of persons who did not come under the classification of the insane, feeble-minded or criminal, but were a different group by themselves, and to this group they applied the term "defective delinquents," which classification has been adopted in many parts of this country. Dr. Fernald has since said that this was used as a general term, without pretending to be the ultimate classification, but that it was expected that the psychiatrists or psychologists would divide it up and classify it into parts.

The term "defective delinquent" may be perhaps more of a legal than a medical term, but Dr. Fernald's idea was to bring the two divergent points—medical and legal—together into a term that would cover each. Hence the coining of the term "defective delinquent."

At the Psychopathic Hospital in Boston this term is not now used, this group being classed as mainly "psychopathic personalities" under the Kraepelin classification, with also a small group of "constitutional inferiority" cases.

At the Worcester State Hospital this group is mainly classified under the head of "constitutional inferiorities."

Dr. V. V. Anderson, the Medical Director of the Municipal Criminal Court for the City of Boston, says that he finds that the term "defective delinquent" is being used by different examiners to define markedly divergent types, and that "altogether we have presented to us a rather loose and confusing symptomatology connected with the term defective delinquent." He has therefore divided this group into three classifications:

First—The "mental defective," believing that "defective" used in reference to the mind of an individual, should carry with it a lack of normal mental development, and should have a very definite meaning to us that is demonstrable by exact measurements.

Second—"Psychopaths," a group of persons whose intellect is not impaired, but who are impulsive, neurotic and unable to adjust themselves to their environments, "psychopaths" being all cases of constitutional inferiority. The mentality of the psychopath is disordered. The mentality of the mental defective is defective.

Third—"Mental delinquents," a distinctly criminal class, this being a social classification. The acts of this group are anti-social; they are impulsive and deliberate, and oftentimes well planned.

The judges of the Municipal Criminal Court refer only such cases to the Medical Director as are obviously abnormal, either in their appearance, their history or their acts.

Southard uses two terms which he applies to sub-groups of his "psychopathic personality" classification at the Psychopathic Hospital. Of the sex group, he says: "A large number could be safely taken care of in the right environment; they do not seek sex delinquencies; they do not go out after sex experiences; but," to use his term, "are subject to a football environment," and having no will power to resist, become easy victims to such an environment.

To another sub-group, who commit impulsive acts, often of violence, in a rather hazy and confused condition of mind, the term of "epileptic equivalent" is applied. Of this group, he speaks quite encouragingly, if properly supervised and treated.

There is a great variation in percentages given in the different States in these groups of cases, probably due to a lack of uniform terminology or classification.

What Has Been Done in Massachusetts?

Following the report of the above Commission, and on their recommendation, the Legislature passed Chapter 595, of the Acts of 1911, as follows:

AN ACT to Provide for the Maintenance at the Reformatory for Women, the Massachusetts Reformatory and the State Farm of Departments for Defective Delinquents.

Be it enacted, etc., as follows:

Section 1. If in any case where a court might by way of final disposition commit an offender to the state prison, the reformatory for women, or any jail or house of correction, or to the Massachusetts reformatory, the state farm, or to the industrial school for boys, the industrial school for girls, the Lyman school, any truant school, or the

custody of the state board of charity, for an offense not punishable by death or imprisonment for life, it shall appear that the offender has committed the offense with which he is charged, is mentally defective, and is not a proper subject for the schools for the feeble-minded, or for commitment as an insane person, the court may commit such offender to a department for defective delinquents, hereinafter established, according to the age and sex of the defendant as hereinafter provided.

Section 2. If an offender while under commitment to any of the institutions or to the board named in section one of this act persistently violates the regulations of the institution or board in whose custody the offender is, or conducts himself or herself so indecently or immorally, or otherwise so grossly misbehaves as to render himself or herself an unfit subject for retention in said institution or by said board, and it appears that such offender is mentally defective and is not a proper subject for the schools for the feeble-minded, the physician in attendance at such institution or a physician employed by said board shall make a report thereof to the officer in charge of said institution or to the superintendent of minor wards of said board, who shall transmit the same to one of the judges mentioned in section twenty-nine of chapter five hundred and four of the acts of the year nineteen hundred and nine. The judge shall make inquiry into the facts and, if satisfied that the offender is mentally defective and is not a proper subject for the schools for the feeble-minded, shall order the removal of the offender to a department for defective delinquents, hereinafter established, according to the age and sex of the defendant as hereinafter provided.

Section 3. No person shall be committed to a department for defective delinquents under the two preceding sections unless there has been filed with the judge a certificate of the mental defectiveness of such person by two physicians qualified as provided in section thirty-two of chapter five hundred and four of the acts of the year nineteen hundred and nine and acts in amendment thereof or in addition thereto. The fees of the certifying physicians shall be of the amount and paid in the manner provided for like service in said chapter five hundred and four, and acts in amendment thereof and in addition thereto.

Section 4. If an inmate of a school for the feeble-minded persistently violates the regulations of the school, or conducts himself or herself so indecently or immorally, or so grossly misbehaves as to render himself or herself an unfit subject for retention therein, the officer in charge of the school shall make a report thereof to one of the judges mentioned in section twenty-nine of said chapter five hundred and four. The judge shall make inquiry into the facts and, if satisfied that such inmate is not a fit subject for retention in the said school, shall order the removal of the inmate to a department for defective delinquents, hereinafter established, according to the age and sex of the inmate as hereinafter provided.

Section 5. At the reformatory for women, the Massachusetts reformatory, and the state farm there shall be maintained departments to be termed departments for defective delinquents, for the custody of persons committed thereto under this act. All male persons under twenty-one years of age committed under the provisions of this act shall be committed to the department at the Massachusetts reformatory. Men twenty-one years of age, or over, committed under this act shall be committed to the department at the state farm. All women and girls

committed under this act shall be committed to the department at the reformatory for women. All persons committed to the departments for defective delinquents hereby established at the reformatory for women and the Massachusetts reformatory shall be and remain in the custody of the board of prison commissioners until discharged as hereinafter provided, and all persons committed to the department for defective delinquents hereby established at the state farm shall be and remain in the custody of the trustees of the state farm until discharged as hereinafter provided.

Section 6. The prison commissioners and the trustees of the state farm, may, respectively, parole inmates of the departments for defective delinquents, herein provided for, at their respective institutions, on such conditions as they deem best, and they may at any time recall to the institution any inmate paroled.

Section 7. Any person may apply at any time to the justice of the district, police or municipal court in whose jurisdiction a department for defective delinquents is located for the discharge of any inmate of said department. A hearing shall thereupon be held by said justice, of which notice shall be given to the applicant and to the person in charge of the institution where the inmate is confined. If after the hearing the justice shall find that it is probable that the inmate can be suffered at large without serious injury to himself or herself, or damage or injury or annoyance to others, the authorities having custody of said inmate shall parole the inmate. Further action on the application for the inmate's discharge shall be suspended for one year from the date of his or her parole. If at the end of said year the justice of the court where the application was filed shall find that said inmate can be suffered to be permanently at large without serious injury to himself or herself, or damage or injury or annoyance to others, the authorities having custody of said inmate shall discharge the inmate. If, at any time prior to the expiration of said year of parole, the justice of the court where the application was filed shall be satisfied that the best interests of said inmate, or of the public, require the recall of the inmate from parole, he may authorize the authorities having custody of the inmate to recall the inmate from parole. If an application is denied, a new application shall not be made within one year after the date of the order denying the previous application. If a person discharged under the provisions of this section is found by any court to have committed, after his discharge, any offense against the laws of the commonwealth, said court may commit such person to a department for defective delinquents without the certificate of any physician.

Section 8. Any special justice, when holding court at the request of the justice, shall have the powers and perform the duties of the justice under this act. In case of a vacancy in the office of justice and in the case of the illness, absence or other disability of the justice, the special justice who holds the senior commission shall, if no request has been made as aforesaid, have the powers and perform the duties of the justice under this act.

Section 9. The record of all proceedings under this act, and all papers in connection therewith, shall be kept as provided in section forty-one of chapter five hundred and four of the acts of the year nineteen hundred and nine, and the same docket shall be used for the proceedings under this act which is used under said section forty-one.

Section 10. All commitments under this act shall be made under an order signed by the judge making the order. Orders for commitment may be served by any person qualified to serve any processes issued from the court in which the justice making the commitment sits or, in case of transfers, by any officer or attendant of the institution from which the transfer is being made. The officer or other person serving such order shall make return of service on an attested copy of the order.

Section 11. All the expenses attending all proceedings under this act shall be allowed, certified, and paid in the manner provided in section forty-nine of chapter five hundred and four of the acts of the year nineteen hundred and nine and acts in amendment thereof and in addition thereto.

Section 12. This act shall take effect when the departments named in section five are ready for occupancy. The prison commissioners and the trustees of the state farm shall notify the governor when said departments are in a suitable condition to receive inmates; and the governor may then issue his proclamation establishing such departments as places for the custody of defective delinquents.

(Approved June 27, 1911.)

That this has never become effective is due to the fact that Section 5 did not provide any money for the carrying out of this law, therefore, in 1913, the following legislation was passed:

(Resolve 124, Acts of 1913.)

RESOLVE to Authorize the Leasing of Temporary Quarters for Defective Delinquents.

Resolved, That the governor and council are hereby authorized to lease and equip, in the name and behalf of the commonwealth, for such time and on such terms as they may deem advisable, buildings and grounds for the care of defective delinquents until more permanent provision has been made in accordance with chapter five hundred and ninety-five of the acts of the year nineteen hundred and eleven. Commitments to the place or places so leased shall be made in accordance with the provisions of said chapter five hundred and ninety-five. The expense which may be incurred under the provisons of this resolve, including the cost attending the commitment, custody and support of defective delinquents so committed, to an amount not exceeding twenty-five thousand dollars, shall be allowed and paid out of such of the prison industries funds as the prison commissioners, with due regard to preserving the necessary sum to maintain the industries of the institution for which the fund was established, may designate.

(Approved June 13, 1913.)

This again proved ineffective, as the sum of $25,000 was not enough to build or equip any building available in the State.

Therefore, at the end of 1913 there was law enough to segregate this group, but there was no proper place in which to segregate them.

On December 17, 1914, the State Board of Insanity voted to make a survey of the defective delinquents in the State Hospitals under its control, with the result that, on April 1, 1915, there were, in the State Hospitals for the Insane and the Schools for the Feeble-Minded in this State, one hundred and fifty-eight (158) "defective delinquents."

This figure probably did not represent a very correct percentage,

as many of the inmates of the institutions were in such a mental condition that they could not be tested intelligently.

The Board were receiving requests from different superintendents to transfer from their institutions many of these defectives, who were trouble-makers and not really insane. The Board transferred them from hospital to hospital, which often resulted in temporary benefit to the patients and relief to the institution from which they were transferred. They were tried in one of our colony groups, with the result that the superintendent soon asked for a transfer of 23 so-called "defective delinquents" (female), with a report that they "were not suitable cases for the colony." This report stated that:

"No. 1213 will not co-operate except for brief periods; continually in trouble; annoys and excites insane patients; obscene and profane at most times.

"No. 892—A fair worker; delights in bothering stupid insane patients and teasing excitable ones. Despite efforts of the nurses makes patients very uncomfortable.

"No. 893—A very effusive, gushing, sentimental patient, subject to outbreaks of violence.

"No. 1226—Sexual pervert; very troublesome; enjoys teasing insane patients and when on the wards spends most of her time doing so.

"No. 970—Excitable, noisy patient, subject to outbreaks of anger on slight provocation; attacks with whatever instrument is handy.

"No. 621—Indolent, noisy, profane, obscene patient, who gets along very well if let alone and not asked to work.

"No. 954—A good worker, but necessary to keep under most careful supervision, as she constantly seeks opportunities to run away. Judgment is extremely poor; she has many times attempted to leave in inclement weather without proper clothing; breaks glass when irritable.

"No. 1131—Alternately very affectionate and assaulting to patients and nurses. Is usually subject each day to one attack of excitement with little provocation, during which she is noisy and violent.

"No. 1216—Patient does well if handled rightly for periods as long as one month, then is subject to unreasonable outbreaks of temper, during which she threatens to mutilate herself, and often to commit suicide. Enjoys making existence miserable for other patients.

"No. 890—Patient is greatly attracted to the opposite sex; needs constant supervision; possessor of tongue that is capable of applying the rudest and harshest epithets to those who have done the most for her. Reluctant to co-operate with plans manifestly for her own good.

"No. 613—Patient who does well for periods of months and then is wilful and stubborn; cannot be reasoned with at these times and is childish and irritable. She has had one illegitimate child and it is still necessary to keep her under strict supervisiion when men folks are about.

"No. 1204—A good worker but a constant fault-finder; always dissatisfied and believes she is disliked and imposed upon.

"No. 898—An indolent, untidy patient, who is eager to join in trouble started by other patients, although she has never been known to deliberately assault any one. Reluctant to move her chair so that space occupied by it can be swept. Will not co-operate with ward routine."

When these cases are committed to the Hospitals for the Insane, they have no use for the insane patients, and associate with the nurses

when allowed to. The life of many of them is congenial, in that they do not have to work, they can talk and loaf, and give vent to their unpleasant dispositions by teasing patients and making trouble generally.

If they are sent to prisons, they are sent to schools of crime and are invariably returned after parole or discharge.

Most every institution has proved to its own satisfaction that it was not able to cope with these individuals, and the one cry was: "Send them to some other institution and not to mine," and this extended to institutions outside the control of the State Board of Insanity, where the feeling was equally strong against receiving them.

The insane hospitals conscientiously believed that they did not belong in their institutions and they were right. The correctional institutions believed that they did not belong in their institutions and they were right. So it seemed to be up to the State Board of Insanity to solve the problem of their care and treatment.

On December 17, 1914, the Board voted to make a survey of the insane prison population under its charge at the Bridgewater State Hospital, which survey was made, with the result that it was found that (?) per cent were not insane but were defective.

Upon rendering the results of the survey at Bridgewater State Hospital by the State Board of Insanity, the Massachusetts Prison Commission sent the following resolve to the State Board of Insanity:

"Resolved, That this board desires to secure a survey of the population of the prisons under its management with a view to determining the mental condition of the prisoners, and that the State Board of Insanity be requested to extend the survey it has undertaken, of the inmates of institutions for the insane, to the prison population."

The State Board of Insanity appointed Dr. A. Warren Stearns, a psychiatrist, and Mr. Cecelio S. Rossy,* a psychologist, to examine into the prison population at Charlestown. Dr. Stearns examined 100 cases and Mr. Rossy 300, with the following results:

Dr. Stearns found 47 per cent with mental defect; Mr. Rossy found 29 per cent feeble-minded and 11 per cent border-line cases.

After receiving these reports, the State Board of Insanity decided to bring about among its own institutions some relief at the earliest possible moment. Two men volunteered to take groups of this class for study and to see what could be done for them.

Dr. William T. Hanson, physician-in-charge of the Insane Department of the State Infirmary, at Tewkesbury, was willing to take a group of 50 cases but could not, for the time being, on account of lack of accommodations in which to group them.

Dr. A. C. Thomas, superintendent of the Foxborough State Hospital, was also willing to take a group of 50 cases but was somewhat similarly situated; but since this hospital is entirely under the control of the State Board of Insanity, it was possible for the Board to proceed to prepare accommodations for such a group, and with this end in view they asked and received from the Legislature an appropriation sufficient to renovate and prepare one building of the Foxborough group for this purpose. This building is nearly completed and it is hoped that a transfer will soon be made.

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*Mr. Rossy is now conducting a psychological examination of the prison population at Sing Sing.

In the meantime, five of the worst cases of defective delinquents (so-called) were transferred to Dr. Thomas' institution. They soon combined to make their escape. One engaged the Assistant Physician, Dr. MacPherson, in conversation, while another girl came up behind him and struck him over the head with a bottle, felling him to the ground, and then jumped upon him, placing her foot in his face in such a manner that the blood ran freely and he was laid low while several of the group ran away. Other patients secured these defectives and brought them back.

These five girls were immediately secluded in separate rooms. Two of them within a few hours made their way from one room to the other through the partition. Without apparently injuring their hands at all they went through plastering, laths and other obstructions. Dr. Thomas decided to apply these energies to something more interesting and useful and found, after interviews with these girls, that four of them were willing to take up different occupations in the hospital. Two months later I visited the hospital and found two of them in the canning factory, perfectly happy and contented, and as well behaved as any of the patients. Another, in the sewing room running a machine, was equally happy, contented and occupied. A fourth had some other employment, and only one (a colored girl) was still confined in a ward.

It has been the custom among the institutions to place these girls on the violent or excited wards, as one girl will upset a whole ward of quiet and convalescent patients. In the same manner will one of this type also upset a whole class in a school for the feeble-minded and render the work of the instructor futile. As the superintendents have usually found that when two were placed on a ward together they connived and planned escape and mischief, they have usually distributed them one to a ward, with the result that a great many wards were upset or disturbed by their presence.

In a further effort towards solving this problem and relieving the institutions of the care of these individuals, the Board decided to choose as one of the subjects of the Thirty-fourth Semi-annual Conference (which was held at the State House on November 16, 1915), "Defective Delinquents: In what institutions do they belong and what shall be their present and future accommodations and treatment?" Beginning on page 224 of the annual report of the State Board of Insanity for 1915 is the account of this conference and what was offered by those present.

At this conference, Dr. Guy G. Fernald, Resident Physician at the Massachusetts Reformatory, read a most interesting paper, which is published in the above-mentioned report; also great interest was shown in the subject and helpful remarks were made by Dr. Walter E. Fernald, Superintendent of the Massachusetts School for the Feeble-Minded; Dr. V. V. Anderson, Medical Director of the Municipal Criminal Court; Mrs. Jessie D. Hodder, Superintendent of the Reformatory for Women at Sherborn; Mr. C. S. Rossy, Dr. A. Warren Stearns, Dr. E. E. Southard, Dr. E. V. Scribner; Mr. Herbert C. Parsons, Probation Officer; Dr. Elisha H. Cohoon, Administrator of the Psychopathic Hospital; Dr. Geo. M. Kline, Superintendent of the Danvers State Hospital; Mr. Walter Rapp, Chairman of the Board of Trustees of the Medfield State Hospital, and others connected with the State Board of Insanity and its work, and last, but not least, the Hon. Frank L. Randall, Chairman of the Massachusetts Board of Prison Commissioners.

An appeal was made at this meeting by those present for further conferences on this subject, and later the following notice was sent out:

THE PROBLEM OF THE DEFECTIVE DELINQUENT.

Tuesday, December 14, 1915, 10 A. M.

Massachusetts has for some time, through its different commissions, been studying the defective delinquent, or mental defective, with a view to obtaining, if possible, what would be the most satisfactory solution for the care and treatment of this class and for their education or re-education. A great number of them are at present confined in our prisons, jails, houses of correction, reform schools, hospitals for the insane, and in the schools for the feeble-minded, and many of them are in the community, including those on probation from the courts.

From experience it is evident that this class do not belong in any of the above places. It has therefore been proposed that we call a meeting of those interested in the solution of this problem to discuss and formulate some plan which can be mutually agreed upon for the disposition or segregation of this class.

You are invited to attend a conference of those interested at the Twentieth Century Club, 3 Joy Street, Boston, on the morning of Tuesday, December 14th, at 10 o'clock. It is hoped that there will be about thirty heads of commissions and departments present, and as most of those present will have something valuable to suggest each speaker will have to be limited to a few minutes.

Will you not make an abstract of what you desire to say and forward in the enclosed envelope at least by Friday, December 10th, if possible, in order that we may arrange the speakers according to the abstract or summary sent us?

As one of the objects of this meeting will be to formulate some practical plan or bill to be presented to the Legislature, we hope that you will give that phase of the problem your serious consideration and offer suggestions to that end. Enclosed you will find information which may be of value in assisting you to come to some conclusions.

JOHN KOREN
FRANK L. RANDALL
EDW. T. HARTMAN
L. VERNON BRIGGS
Committee on Arrangements.

In accordance with the above, a meeting, which was attended by very nearly all the heads of the institutions of Massachusetts—correctional, charitable and others interested in this problem—authorized the chairman of the meeting, Mr. John Koren, United States Representative to the International Prison Association, to appoint a committee of ten besides himself to make further study of the problem of the defective delinquent and to bring some recommendation before a future meeting.

On December 23rd, at the call of the Chairman, this Committee met, every member being present. A lengthy discussion of the problem was held, with the result that a sub-committee of three was appointed to consider the suggestions of the larger committee which seemed to dominate at this meeting—that Ipswich Jail and the Prison Camp at Rutland be

considered as a starting point for segregating the male defective delinquents, and that new buildings on the grounds of the Massachusetts Reformatory for Women at Sherborn be considered for the female defective delinquents. The Chairman appointed on this sub-committee:

Dr. L. Vernon Briggs (Chairman), Secretary State Board of Insanity;
Hon. Frank L. Randall, Chairman of the Prison Commission, and
Dr. Ernest B. Emerson, Medical Director of the Bridgewater State Hospital.

Owing to the illness of Mr. Randall, Benjamin Loring Young, Esq., former member of the Massachusetts Board of Parole, was added to the committee.

This Committee, having in mind the authority granted by Resolve 124, Acts of 1913, and the previous law, Chap. 595 of the Acts of 1911, investigated all the few available places in Massachusetts where there was any possibility of establishing a separate unit for this group. Ipswich Jail was in some ways an ideal place and the most promising, but as it depended upon the County Commissioners to give up the jail for this purpose, and owing to a division of opinion among them, this plan could not be carried out. Finding the Ipswich Jail unavailable, after several conferences between Mr. Randall of the Prison Board, and Mr. Moody Kimball, Chairman of the County Commissioners of Essex County, the Prison Commission prepared a bill for the Legislature and filed it. The bill (House Document No. 429) was as follows:

ACT TO PROVIDE BUILDINGS FOR DEFECTIVE DELINQUENTS.

To provide for the establishment of departments for defective delinquents, authorized by chapter five hundred and ninety-five of the acts of the year nineteen hundred and eleven, the prison commissioners are hereby authorized to construct at the Massachusetts reformatory or at the reformatory for women, such buildings as shall be needed for the proper care of such delinquents as shall be committed thereto.

If in the opinion of said board, it shall be expedient to establish an institution for such delinquents apart from either of said reformatories, and in place of such departments, they may construct said buildings upon land obtained as hereinafter provided. If such buildings are so constructed, the institution shall be known as the Colony for Defective Delinquents, and persons may be committed thereto, held therein and released therefrom in the manner provided in said chapter for the commitment to said departments, and for the custody and release of said persons.

For the purpose of carrying out the provisions of this act, said commissioners, with the approval of the governor and council may purchase or take, in behalf of the commonwealth, land for said departments or said colony, but the expenditure for land so purchased or taken shall not exceed ..... thousand dollars. The expenditure for the construction and equipment, ready for occupancy, of buildings constructed as aforesaid, shall not exceed ..... thousand dollars. So far as shall be practicable, the work of construction shall be performed by the labor of prisoners held in the Massachusetts reformatory. There shall be paid to the reformatory, for such labor, such sum as shall be fixed by said commissioners, with the approval of the governor and council.

The plans for buildings to be erected under the provision of this act shall be subject to the approval of the state board of insanity and of the governor and council.

The expenditures for carrying out the provisions of this act shall be paid from the prison industries fund.

In order that the above bill might be fully discussed, as well as any recommendations of the committee or sub-committee, and some practical plan or bill agreed upon, a meeting was held at the Twentieth Century Club, Boston, on Tuesday, January 18th, at which there was a full attendance and the problem of the Defective Delinquent was again carefully thrashed out, after which it was voted that the sense of the conference was that the substance of the bill presented by the Prison Commissioners be approved, and a committee of five was to appear before the Legislature in behalf of this representative body.

The bill was reported upon favorably by the Legislative Committee, after a hearing and the representations of those interested, but when the bill got as far as the Ways and Means Committee it was rejected on May 5, 1916, nearly at the end of the session, on account of the expense involved.

An attempt is going to be made next winter by those interested, joining with the Prison Commission, in urging the passage of a bill much along the same lines. Mr. Randall has resigned as Prison Commissioner, owing to ill health. His successor, Col. Cyrus B. Adams, until recently Superintendent of the Massachusetts Reformatory at Concord, authorizes me to quote him in saying that he is firmly of the belief that the class of so-called defectives must be segregated in a separate building and there classified into different groups; that the same treatment cannot be applied to all; that they must not be connected with or on the grounds of either prison property, insane hospital or reformatory of any kind, and that they should have medical care.

I believe that the medical care of this class should extend to a study of the internal secretions, which may be responsible for certain types of this class.

The plan which I believe will eventually be carried out will be along the following lines:

A building or group of buildings shall be erected, to be termed a school, where educational and re-educational methods may be fully carried out. This would include a department or certain subdivision where the three R's, hygiene and ethics are taught, with possibly special classes for languages, music, etc.; a department of occupational therapy where a certain small group who are not capable of other occupation may be taught embroidery, lace-making, weaving, pottery, etc., and a department which may be termed a "trade school," where carpentery, cabinet work, carving, printing, brick-making and laying, tile-work, masonry, shoe-making, farming, etc., may be taught; also, for the women, dressmaking, cooking, knitting, laundry work, canning, preserving, etc.

The Superintendent and Instructors shall become vocational experts, and in addition to the above they may find many who are especially fitted to take up the study of bookkeeping, telephone and telegraph operating, and clerical work of various kinds, and possibly stenography and typewriting.

The "defectives" are creatures of habit to a great extent. They individually think along the same lines; one is always stealing things,

another setting fires, another immoral, etc. A careful study of the individual would probably lead to one of the above occupations or trades as avenues which would take that person out of chaos into a useful and happy life. Most of them have never had a fair chance, having been knocked from pillar to post, shut up without any intelligent effort being made to direct their energies to something that is more vital to them than even their mischief and misconduct, punished in prison and out of prison because they would not work at what might be most distasteful to them.

In quite a number of country academies and high schools in New England a good proportion of the above trades are taught, and only those are graduated who show proficiency in their particular work, as well as book knowledge of the subject. If a town can teach many of these subjects, certainly a state ought to. A school of this kind (and it ought not to carry either the name of an institution or a hospital) should be able to graduate a good many of its pupils each year. There will be some, possibly many, who may never graduate, but every one of these defectives should be given an opportunity to prepare himself to go out into the world and make good.

There are many, *i. e.*, so far as we have progressed, or from our present standards, who will never be able to take any place in the community, but that does not mean that there is not perhaps a larger group who, because they have been guilty of some delinquency, should not be shut up for the rest of their lives. We know many of these defectives are capable of good work, showing marked ability in one direction or another, though often misapplied.

Some have undoubtedly been born without any moral responsibility in their make-up. Is it right to punish these mortals? It may be right to give them custodial care, but our responsibility does not end there. To be sure, we have protected the public, but in making them do a certain stunt or piece of work daily in an institution, we shall have made them into a producing machine, but we have not done anything for them individually. Surely, in this enlightened age, these handicapped individuals are entitled to as much of our time and effort as our normal children, and we should give them a great deal more if they need it. Every State should provide special units for the care of these groups, and each unit should provide for a group who will have to receive medical care.

As to the Examination.—There can be no uniform examination of all the groups under the head of "defective delinquent." There are today a good many repeaters, or hospital rounders, who get on to the examination and even obtain copies of the papers which are used in the different tests and become proficient in their answers. Psychologists are now recognizing in their work of examination certain subjects who have prepared themselves, and the psychologist changes the questions, much to the surprise of the subject, who, instead of passing at a very good age, which was possible with previous knowledge of the examination, immediately falls below the standard.

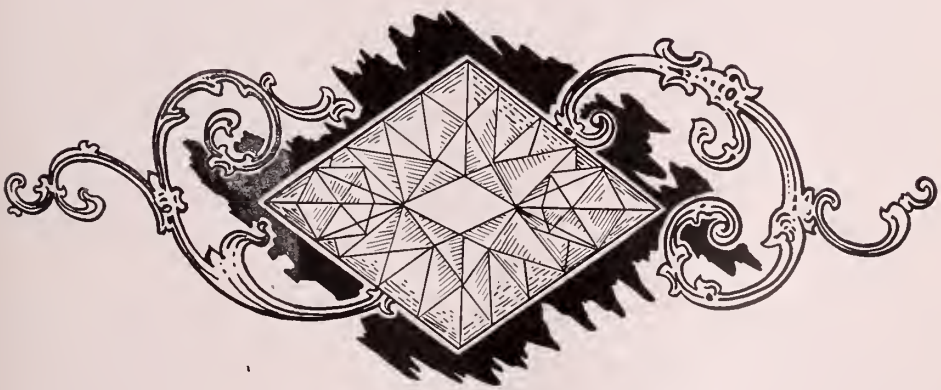
There is the same danger in the prisons from a uniform examination, and it has been noted by certain psychologists that after the third or fourth day the mental ages of the prisoners rose rapidly, due to passing of the words from prisoner to prisoner after the examination and

return to their cells, so that those last examined became quite proficient in their answers.

The time of examination of this group, especially prisoners, has been discussed. I agree with Mr. Rossy, who says:

> 1. A psychological examination should be given to every new inmate of the Prison. As the men come into the Prison, they should be referred for a mental examination in the same manner that they are referred for a medical examination.
> 2. The findings of the psychological examination, together with such history as is necessary for a psychological diagnosis, should be entered in a special card catalogue, which should be available to the Prison officials.
> 3. A psychological examination should be given immediately before any prisoner comes up before the Parole Board. In every case this examination should be supplemented by a thorough study of the history of the subject. This history, as required for aid in diagnosis in the psychological examination, must include the following branches: (a) family, (b) personal, (c) school, (d) social, (e) economic, (f) moral, and (g) medical. A detailed written report should be required of the psychologist on every case coming up before the Parole Board.

I believe that in addition to the above the examination should be made on the discharge of a prisoner. Dr. Guy G. Fernald, I understand, now examines only upon discharge.



THE ORGANIC, FUNCTIONAL AND PSYCHIC FACTORS IN HYSTERIA.

By

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THE factors in hysteria may be summarized under the heads, organic, functional and psychic, although the psychic is merely a specialized function in itself. Of these, the psychic is the only one indispensable to the term hysteria as usually defined. Of the polyglot symptoms seen in this much abused disease-symptom we are obliged by the terms of the definition to recognize a psychic origin for practically all of them. That this is in some cases a very difficult matter is readily apparent, as only a very thorough study of any certain case will eliminate the possibility that we are dealing with neurasthenia, hystero-epilepsy or other condition.

Hysteria is essentially a complex symptom of perverted function. To adhere strictly to our idea, one of these functions must be that of interpreting sensory stimuli.

Matter is primary. Anatomy is the correlation of matter in order that it may functionate, whether properly or not depends upon the perfection of the system. Every process of the body depends upon this arrangement. Any deviation from perfection causes a corresponding deviation in the dependent functions. In the broad sense, if a machine is perfect its work will be perfect; hence, we may say that if the organ is without fault so will the functional be. The fact is, I believe, that in all cases an organic lesion is present on which to base the earliest symptoms. These symptoms are at first simple, probably subjective. Gradually they become more elaborate as the patient finds it necessary to add to the objective picture in order to bolster up what might become a lagging interest in her condition. The psychic process is probably the most sensitive, in that it reacts to every sensation; the most dependent, in that it is influenced by every ailment, every mood and even by the weather. It is subject to more critical inspection than is any other process, for by it we make contact with our neighbor, and through this contact, by reason of man's social instinct, the psyche is more open to criticism, being as we may say, objective.

It is hard to believe that in so-called hysteria the psychic is only and wholly at fault, although it seems impossible to account for some of the symptoms otherwise, but granting for the time that in true hysteria this is the case, let us notice some of the findings as they affect the organic and functional "lesions" in the entity, if such there is, of hysteria. In our patients we find almost constantly a reference to pains in the generative organs with disturbance of the functions of the same. Pre-cordial pains are also common in this ailment with subjective and objective disturbances in the rhythm and force of the heart's actions and with dyspnoeic symptoms. There are disturbances of vision with concomitant dilatation of the pupils. We see so many subjective symp-

toms with objective symptoms in their train in this disease that it must make us wonder if there is not something deeper than a myth of the mind. There may be and quite frequently is, a cessation of the menstrual flow during a hysterical attack; there is a diminution in the salivary flow if we become frightened while masticating our food. We attribute one to hysteria, the other to the sympathetic nervous system. May the sympathetic nerve control not have a more intricate communication and be, as it were, reciprocal as between the specialized psychic function and the specialized any-other function? In hysteria it seems we have examples of function influencing function, albeit perversely, and indirectly influencing the organism, as for instance in the swelling of the joints.

Some authors lay stress upon the affection while others regard it more or less lightly. The disease occupies much the same place in the mental field that rheumatism does in the medical field—a disease upon which may be loaded our failures of thorough examination or of proper interpretation. It is the junk pile whereon we throw our contributions to indolence or indifference. It has such a great number of symptoms and these are of such divers varieties that any time a patient shows symptoms out of the ordinary and not easily understood, we immediately call into play our faculties for making "intuitive diagnoses" in which respect some of us are remarkably gifted.

The fears of the phobist are in a way analogous to the anticipations of the hysterical, with the difference that in the latter the anticipations are more or less realized in the paroxysms with their accompanying ministrations. There are probably more people with phobias and fewer with a truly hysterical taint than we know. The former are restrained from the expression of their fears by the greater fear of society; while the latter have every reason and encouragement to become more chronic and more deeply set in their perversions. A strict adherence to the theory of a purely psychic origin would make the anatomical and physiological pathology of very little importance, but I am convinced that we give too little attention to the differential diagnosis between this and symptoms that might be relieved if proper means were used. It seems plain to me that we must exhaust every means in our power to discover a possible organic lesion, even at the risk of causing a new train of symptoms by suggestion.

PERNICIOUS ANEMIA AND THE NERVOUS SYSTEM.*

By

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THE development of nervous symptoms has long been noted in anemic cases and the changes common to such conditions have been better understood as they have been more thoroughly investigated in the last ten years.

I have not delved deeply into the literature so as to speak positively of the earliest references to the relations of affections of the blood to nervous changes; but in 1905 Langdon writing (*Journal A. M. A.*) upon Nervous and Mental Manifestations of Pre-Pernicious Anemia, introduced his paper thus: "Most practitioners of wide experience have probably been puzzled at times by a class of patients presenting an anomalous grouping of general and nervous symptoms, which have passed from one physician to another; perhaps labelled as 'general debility' by one, 'neurasthenia' by another, 'crankiness' by the third, 'hysteria' by others; cases which steadily progress toward a fatal termination in spite of supporting treatment, 'rest cures' and optimistic prognoses."

Langdon at this time thought the question as to whether the blood deterioration led to the nervous phenomena and whether there was a common cause for both, not satisfactorily answered. His symptomatology of "general ill health, impaired control, gradual mental deterioration, intramuscular and articular pains," seem more vague and indefinite than his reference to "sensations of numbness, tingling and weight in the extremities, usually more marked in the feet and legs" so commonly seen in these cases and the objective sensory disturbances, loss of tactile and pain sense, about feet and ankles, patchy in distribution, accompanied by knee-jerks of increased activity, ankle clonus, occasional Babinski phenomenon and sometimes distinct ataxia of gait and station. In these cases, the lemon tint of pernicious anemia may not point the way to accurate diagnosis until in the later stages. Langdon cited some nine illustrative cases.

Many cases have been reported since then and the nervous manifestations have been more thoroughly studied. These may or may not be accompanied with mental phenomena.

Vogel (*Journal A. M. A.*, April 1, 1916), in discussing theories of the etiology of pernicious anemia, admits that its etiology and pathegenesis are still difficult and perplexing problems. He regards its syndrome as based on increased hemolysis and a toxic action on bone marrow, that the hemolytic agent is still unknown in most cases and probably of endogenous origin, probably a disturbance of lipoid metabolism, and he concludes: "Furthermore, one is led to believe that there must be some constitutional anomaly, some inherent weakness, either temporary or permanent, which renders the body susceptible and permits other

*Read January 6, 1919, before the Wayne County Medical Society, Detroit, Mich.

agencies to take effect." All of the entities variously ascribed as possible causes, he thinks, form only "single links of the etiologic chain which bind the victim of pernicious anemia to his fate."

Rogers (*Journal Nerv. and Ment. Dis.*, Vol. 42, p. 693) reported to the Chicago Neurological Soc. (Jan. 21, 1915) two cases of pernicious anemia with disturbances of the central nervous system and calls attention to the fact that in some cases the spinal cord shows evidence of disease even earlier and more markedly than the blood and that this may point to a toxin exerting its influence first on the cord changes and that possibly changes of heart, liver, kidneys and cord may not be due to the anemia, but that all are co-ordinate changes of the same unknown poisons. He speaks of the most common cord symptoms as numbness, tingling, etc., and suggests a division of cases with spinal symptoms into: (a) those which have a spastic gait with increased reflexes and more or less paralysis, suggestive of lateral columns involvement, and (b) those in which the symptoms are strongly suggestive of tabes dorsalis, the reflexes being diminished and ataxia present, rather characteristic of invasion of the posterior columns. He refers to possible mental symptoms and finds himself unable to classify them since they range from mild depression to profound melancholia and from slight exhilaration to distinct maniacal symptoms. He quotes Cabot as finding out of 647 cases of pernicious anemia, delirium in 44, delusions in 14, hallucinations in 8, dementia in 9, melancholia in 3, and mania in 3. In three markedly insane cases, mental symptoms preceded the anemia by several months. From this it would seem possible that these changes are due to some unknown toxic element which may affect the nerve-cell before there are obvious blood changes. In discussing this paper, Patrick referred to it as a curiosity that pernicious anemia seems a rarity in Paris compared with its much greater frequency in London, and suggested that subacute degeneration was a much better term descriptively as applied to the pathological changes involved than sclerosis. He had observed that the numbness beginning in the hands and fingers oftentimes did not progress there but later began and progressed more steadily in the toes and feet. Blood examinations may be surprising in that they often seem to bear in the evidence which they afford, no constant relation to the cord changes present. A case almost paraplegic and confirmed by one laboratory man as a pernicious anemia case, was doubted by another who thought it rather simply a secondary anemia. These cases live longer than at first thought and cases have been known to live for five or six years. Treatment may help the anemia but not the cord changes.

Bassoe cited the case of a physician with numbness of fingers and typical pernicious anemia picture, who made a fine recovery and resumed practice. This is unusual, however.

Cadwalader (*Transactions American Neurological Assn.*), in presenting the histories of nine cases of Subacute Combined Sclerosis of the Spinal Cord with Severe Anemia, said that he had found in each case disturbance of voluntary motor power of the lower extremities with ataxia and moderate spasticity, exaggerated tendon reflexes and in all but one a positive Babinski. Two types of sensory phenomena were observed, (a) subjective, as numbness, tingling, burning, coldness and heaviness of lower extremities or hands and (b) objective (as shown by examination), bone sensation being lost or modified, while sensations for temperature and pain were normal in all but one case. Ability to recognize

posture of the toes was diminished. The long fiber system alone, he regards as involved.

Lube (*Deutsche Zeitschrift für Nervenheilkunde*, Bd. 46, Hft. 4 and 5), reports several cases of pernicious anemia and finds the toxic agent unknown but having a special affinity for the white substance and affecting not only the cord, but also the brain. He finds the nervous lesions sometimes secondary to vascular changes.

R. O. Lenel (*Archiv. für Psychiatrie und Nervenkrankheiten*, Bd. 50, Hft. 2), writes of Spinal Cord Degeneration in Pernicious Anemia, cites a case studied, and reviews the literature and the various theories as to vascular or toxic origin. Rogers elsewhere (Wisconsin Med. Jour., Oct., 1915) concludes his report of cases thus: "It would seem that pernicious anemia is the result of a toxemia or autotoxemia acting on the tissues of the body in general, but showing a selective action for certain tissues, preferably the red blood-cells and nervous tissue. Certain types of pernicious anemia, in cases in which symptoms indicating involvement of the nerve centers are first to appear, may readily be confounded with tabes, paresis, myelitis, insular sclerosis and even hysteria, the diagnosis resting with the blood examination. In cases of pernicious anemia with marked involvement of nerve tissues, the blood findings are less characteristic and, too, these cases manifest a greater tendency toward remissions, making the prognosis more favorable."

Dr. J. A. F. Pfeiffer, of the Government Hospital for the Insane (*Journal Nervous and Mental Disease*, Vol. 42), reports the neuropathological findings in a case of pernicious anemia with psychical implication. There was early fatigue and nervousness and later languor and progressive weakness, headache and intestinal disturbances and delirium, and still later restlessness and hallucinations. The red blood cells were reduced to 900,000 and the hemoglobin to 30 per cent., color index 1.6 and white cells 6,000. There were normoblasts and several megaloblasts, which are usually in evidence in these cases.

As to microscopic changes, the brain appeared oedematous and some veins distended. There were microscopic changes in the cortex and white matter of the hemispheres, of which swelling of the ganglion cells was the most frequent change observed. Increase in the glia tissue was not pronounced, though there was some proliferation and enlargement of the nuclei. Definite degeneration of the posterior columns was evident in the cervical and dorsal cord, and a light grade diffuse alteration in the lateral columns, though less marked. Cord changes were most prominent in the cervical region. The ordinary cord changes have been described as pseudo-combined sclerosis, patchy irregular degeneration often confined to the posterior columns, sometimes combined with a similar process in the lateral columns. The marked changes in the white matter of the cord were characterized by degeneration of nerve fibers with a compensatory glial metamorphosis, tending to terminate in sclerosis. He concludes that cerebral changes can be demonstrated in progressive pernicious anemia and that in cases with psychical phenomena changes in the cortical neurones occur similar to those found in psychoses of toxemic origin.

In 1912 (*Medical Record*, Jan. 27, 1912), Camp reported a case of pernicious anemia with typical cord changes and a mental state resembling paresis and concludes his paper thus: "It seems to be of scientific interest, as well as the greatest practical importance, to know that per-

nicious anemia can be the cause of a syndrome of nervous and mental symptoms that so closely resembles paresis that a clinical differentiation between them cannot be made with certainty without the examination of the blood and cerebrospinal fluid."

Barrett (*Amer. Jour. Insanity*, Vol. LXIX, No. 5), gives the results of his studies of nine cases of "Mental Disorders and Cerebral Lesions Associated with Pernicious Anemia." Among some 650 autopsies there were 15 cases of pernicious anemia and the author calls attention to the fact that "in Michigan pernicious anemia is relatively more frequent among diseases in general than elsewhere." In these cases, degenerations of the pernicious anemia type, particularly of the dorsal and lateral columns were common. A study of the cortex in nine cases showed distinct pathologic changes in eight. The nerve cells were altered in all but one case. There was commonly "moderate fatty degeneration with distintegration of the chromophilic substance of the cell. The neuroglia in most instances showed a diffuse increase, usually slight, but in two decidedly marked." Barrett sums up the pathologic changes thus: "As a whole, not of a specific type, but rather those which occur in conditions of chronic intoxication and resemble those found in chronic alcoholism, namely, the glia overgrowth, vessel changes, miliary hemorrhages, and intramedullary fiber degenerations. As in toxic processes, the vessels are severely affected." He points out, on the clinical side, the frequent occurrence of suspiciousness and irritability, the development of the delusions of persecution, the auditory hallucinations and occasional memory impairment and confabulation and concludes "that mental diseases may occur associated with Pernicious Anemia, which seem to be of more than incidental importance and that these show resemblance to mental disorders symptomatic of toxic conditions," and, further, "that pernicious anemia may be associated with pathologic changes in the cortex of the brain, which in their final aspects are such as have been observed in mental disorders associated with toxic influences, and in addition specific lesions, which resemble those occurring in the cord in pernicious anemia."

Two cases occuring in the service at Harper Hospital are good illustrative cases:

Case I. A typical case is that of J. G., aet. 52, who entered the Medical service of Harper Hospital, October 10, 1916. He had not worked for three years and was in general good health prior to present trouble. Not well since an abrasion of leg in 1912, which later involved deeper tissues and healed very slowly.

In April, 1913, patient first felt a tingling of the tips of the fingers, though prior to this there had been much pallor and a yellowish tint of skin and general bodily weakness. Later the fingers became numb and clumsy and he found it difficult to dress himself and still later similar sensory symptoms occurred in the toes and soles. Gradually the whole hand was involved and the legs up to the knees. In April, 1914, a sense of constriction was experienced, a belt-like sensation, and during 1914 and 1915 there were frequent attacks at night of præcordial pain.

Hospital notes record that: The skin is pale and of a lemon color, and the gums, tongue and palate are very pale. The knee-jerks seem more active than normal. The abdominal and cremasterics are not elicited. There is an area of hyperæsthesia like a belt, between umbilicus and symphysis anteriorly, and from the third to fifth lumbar vertebra posteriorly. No areas of anaesthesia. Negative points are here omitted.

The blood examination showed total erythrocytes, 840,000; hemoglobin, 30 per cent.; color index, 2.0. There were marked changes in size and shape of the cells (aniso- and poikilocytosis), and there were nucleated red cells present. Total leucocytes were 4,600; polys 41 per cent. and monos (including the nucleated reds) 59 per cent.

The systolic pressure was only 106 Mm. Hg. and the diastolic 58. The blood changes are quite typical and the fact that the principal symptoms are sensory in character would lead us to expect more invasion of the posterior than of the other columns of the cord.

Case II. A case showing both motor and sensory involvement was that of J. H., female, clerk, aged 51, and transferred to my service, admitted to Harper Hospital, September 9, 1914. She died in the Hospital December 22, 1914. The family and personal history prior to the onset of present illness are practically negative. Present trouble began about one year before admission to the Hospital with numbness of the hands and forearms. About six weeks before admission numbness of feet and legs began and she then complained of numbness over the abdomen. There was easy fatigue and some difficulty in walking. She was not sure of holding articles in her hands and her principal complaint was of great weakness. The blood count varied slightly from time to time. Red cells, shortly after admission, numbered 4,010,000, and the white cells 2,900. Polys were 44 per cent.; small lymphocytes, 28 per cent.; large, 13 per cent.; large mononuclears, 7; transitional, 4; eosinophiles, 4. The hemoglobin remained quite stationary at 70 per cent. On November 30th the total reds was 3,360,000 and the whites 7,600, and the differential count showed: polys, 74; small lymphocytes, 21; large, 4; eosinophiles, 1. There was slight poikilocytosis, but no nucleated reds and no abnormal leucocytes. The color index does not seem to have been recorded. The negative details of thorough physical examination, it is needless to go into here. Clinically there was increasing fatigue, weakness and motor impairment.

Notes of the neurological examination record that the pupils were markedly stiff and sluggishly responsive, that the knee-jerks were much exaggerated and that there was bilateral ankle clonus. The gait was stiff and spastic and she was early unable to walk without assistance. The Romberg symptom was present. As to the sensory examination tactile sense was found unimpaired as also the temperature sense, but pain sense was much impaired over both upper and lower extremities and the face. She died December 22nd, and examination of the spinal cord showed involvement of both posterior and lateral columns, the pathologist reporting as found in the posterior columns "spots of degeneration as brought out by the osmic acid stain" and that "the lateral columns also show patchy degeneration at different levels, the cord showing the usual picture of the type commonly found in pernicious anemia."

Case III. Another typical case, a woman of 50, from up in the state, of anemic appearance, consulted me March 23, 1918. A sister had died at 53 of pernicious anemia with cord changes but otherwise the history was entirely negative. Her complaint was of great numbness of the legs which had begun in the feet but then extended to the body and had made going up and down stairs and walking very difficult for her. In the Fall of 1917, with the coming of cold weather, her legs began to feel as if wrapped in wet sheets and numbness had been noted for a month prior to that. Of late, there had been easy fatigue. Her heart sounds were normal, her pulse 84, small and regular, her systolic pressure 112 m.m. Hg., and her diastolic pressure 80. She was uncertain on her feet and the Romberg symptom was present. She was sent to the Detroit Clinical Laboratory for a complete blood count and this was reported: Red cells, 3,648,000; whites, 6,300; hemoglobin, 80 per cent.; color index, 1.11. Differential count: Polys, 61 per cent.; large lymphocytes, 7 per cent.; small, 30 per cent.; eosinophiles and transitionals, each 1 per cent. The red cells were slightly irregular in size and shape. These findings amply accounted for the symptoms of which this patient complained.

Though well aware that I have herein added nothing new to the literature of this subject, I deem it worth while to thus call attention to the fairly frequent involvement of the nervous system in cases of pernicious anemia and to the fact that thus is developed some toxic agent, as yet unknown in composition, which seems to have a special affinity for axonal tissues (white matter) but which also more or less involves the nerve cells; that the cord is more commonly affected than the brain, and that this toxic agent more commonly and early involves the posterior columns and that the lateral columns are later involved, though in some cases the lateral columns suffer most. It naturally follows that sensory

symptoms, numbness, tingling, etc., are the most frequent symptoms though these sensory changes may, as in tabes, involve impairment of gait. Spastic conditions, rigidities, etc., of course, develop *pari passu* with the involvement of the lateral columns in pathologic changes. If we keep in mind the fact that changes in the blood-picture may thus account for both sensory and motor symptoms which might otherwise seem obscure as to cause, we shall be guided to helpful diagnoses in these cases. The blood count is of more importance to the neurologist than is too commonly thought.

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A NEW MALE HOMOSEXUAL TRAIT (?)

By

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Mitarbeiter, Zeitschrift für Sexualwissenschaft.

THE beginning enjoined upon Brother Ram is always the best. A brochure called *Walt Whitman's Anomaly* (1), then, which was published in 1913 and which traced the inverted sexual disposition of that poet, brought me some correspondence both home and foreign. Amongst these correspondents was an English public school 'coach,' who pointed out a slip I had made and whom later I met. Then I found that although he had written he was glad my book had appeared*, he was an invert himself; and not only this, but a member of a homosexual coterie; and not only that, but one who physically indulged his abnormal appetite. Upon which, I felt that his acquaintance and correspondence were too potentially compromising for one whose scientific name was as yet extremely slight. I asked him to send his "case" to Dr. Havelock Ellis (to whom I wrote about him) and declined further communication with regret, for, of course, clinical experience is the only road to discovery. However, one observation was made. He kept a large cat of which he seemed very fond, and he remarked that many of his inverted friends had the same taste in pets. Moreover, after relating this to a relative who is a lawyer, the latter told me that a man whose conviction for petty fraud he had lately secured, had been found, when enquiry into his antecedents was made, to have been previously convicted of attempted sodomy, and also to be an exhibitor of prize cats.**

Now since Hirschfeld's (2) exhaustive work does not mention such a trait, the matter seemed worth inquiry; and I have endeavoured to attack it in the following way: First, I have taken the last named author's list of eminent men who were of inverted disposition, and endeavored to find records of their affection for cats as pets; secondly, I have taken eminent men stated to have been cat lovers, and looked for evidences of inversion in them.

Cat Lovers Among Eminent Male Inverts—Hirschfeld's list needed cutting down for my purpose, however, for it went back to antiquity and thus comprised those concerning whom few small details of personal character are now ascertainable. Again, homosexuality amongst ancient Greeks and Romans was a different phenomenon to what it is amongst moderns, at all events, in Northern Europe and America. Also the present position of the cat as a domestic pet is of fairly recent introduction.

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*His justification of this statement may be of interest. Our attitude, he said in effect, towards you medical investigators may be thus expressed: "Go on! Show how many eminent men and women are homosexual; it will be all the better for us as tending to produce tolerance for our congenital disposition."

**I hasten to say that the names I have seen of male fanciers of cats include many whose interest is clearly exclusively that of a stock-breeder, as is shown by their successes in showing other domesticated animals, such as dogs.

Tame cats were very uncommon (3) in England, for instance, before the ninth century. Further, some of the names given by Hirschfeld were of persons not notable enough for detailed record of their tastes to have been left. These necessary exclusions made, the number of whom I have obtained a fair account is 31; and of these 31, four seem to have been uncommonly fond of cats. Let me, before giving their names, take the precaution of saying that all that is asserted of their sexuality is that their *disposition* was inverted; nothing is here alleged as to deeds, as to any physical indulgence of their abnormal temperament. It should be remarked, also, that the inversion is not necessarily radical inversion; some degree of normal sex inclination may co-exist with the abnormal tendency.

Taking the said four in chronological order, the first is Horace Walpole. It was his cat that was drowned when trying to catch goldfish, as commemorated by the poet Gray: Walpole had the first stanza of the ode inscribed on the pedestal supporting the fatal bowl. Of the pictures he made or copied himself, six in number, two were of boys, and one of a girl with a cat. In his bedroom at Strawberry Hill was a picture of a cat in an ebony frame, and in the 'Green Closet' (note the colour) were two kittens in marble by Mrs. Damer (note the artist's sex). Another of his pictures, which, however, were very numerous, was one of Madame du Deffand's room and cats. Before leaving Walpole, we might add that he and nearly all his friends were bachelors; and that the Freudian theory of the origin of inversion is suggested by the subject of his tragedy, easily his most ambitious literary performance, which was the incestuous passion of a mother for her son.

Second comes Edward Fitzgerald, the author, of Omar Khayyam fame. Fitzgerald (*Life* by J. Glyde, p. 272) describes his own recreations as pottering about the house and garden, feeding the chickens and playing with the cat. Glyde speaks, too, of Fitzgerald's evenings with a sleeping cat, curled up in a chair beside him, which he would unconsciously caress as he read. A. C. Benson mentions the same trait, putting it that Fitzgerald liked a cat and dog on the rug, and an old woman in the kitchen. He was much interested in a friend's keeping cats, which, says T. Wright (*Life of Edward Fitzgerald*, p. 193), were treated like human beings and taught numerous accomplishments, so as to be the talk of the neighbourhood. Fitzgerald extended their fame to Woodbridge, and also told a niece of his how this friend had a cat stuffed after death, and how he would sit with another one at table. For the rest, Fitzgerald was of course an enthusiast of male friendship; one of his friendships which was well known was with a handsome fisherman called "Posh" Price, whom he helped financially. He married, but was soon separated from his wife, whom he would pass with the slightest of recognitions.

The next is the celebrated French poet, Charles Baudelaire. He was expelled from school for homosexuality. The fifty-first poem in the *Fleurs du Mal*, the book which had to undergo expurgation after prosecution for immorality (although remembering Flaubert's fate, one must not make too much of that) is called *Le Chat*, and expresses great affection and sympathy.

"C'est l'esprit familier du lieu

. . . . . .

Peut-être est-il fée, est-il dieu?"

In a caricature entitled, *Les Nuits de M. Baudelaire*, appearing in the memoir by Séché and Bertaut, there are shown beside the poet, a cat, the shadow of the head of another cat, and a beast which is either cat or dog. Baudelaire writes to Nadar (*Charles Baudelaire Intime*, by Nadar, p. 92): "Dernièrement il t'est arrivé, en te moquant des gens qui ont eu ou qui ont la passion des chats, de confondre Poë avec Hoffmann. Sache qu'il n'y a pas de *chat* dans Poë, excepté un qu'on éborgne et qu'on pend, et dont le successeur, borgne aussi, sert à découvrir un crime."

Lastly, there is Walter Pater, the English writer and critic. The evidence to Pater's homosexual disposition might first be briefly given. He never smoked and never married; was entirely averse to outdoor games, although not physically weak; and wore customarily a green tie. His works show *passim* a special sensibility to young male beauty. In Mallock's caricature of him in *The New Republic*, he is made to ecstasize over the "keener and profounder passions" of the past—"Harmodius and Aristogeiton, Achilles and Patroclus, David and Jonathan, our English Edward and the fair Piers Gaveston....." As A. C. Benson's biography of him narrates:

"In his early days at Oxford, there was a certain movement, the *epigoni* of which school, in certain notorious instances, ended in complete moral and social shipwreck."....."Pater would say reckless things that could be construed as dangerous."

This same authority may be adduced as regards the other point, viz: ".....his [Pater's] own domestic cats, indeed, were kept and lovingly tended, till from age or disease, they had nearly lost all semblance to the feline form. He was deeply conscious of the charm of seeing these bright creatures, so close at hand, with the extraordinary relation that may exist, such perfect confidence, such unrestrained affection, while yet there is no communication of thought, and so little comprehension on either side of what is really passing in the mind. He was strangely attracted by the mysterious tie, so close and, in a way, so intimate, and yet with so little mutual understanding, and accompanied by such isolation. He was particularly fond of cats, their dainty ways, their graceful attitudes...."

Four out of thirty-one is a proportion of one in eight; and I do not think one out of every eight men, or, for that matter, one out of every eight distinguished men, could be found as devoted to cats as these were: their affection went a good deal beyond the mild regard that a home-worker, as an author must be, might normally have for a domestic inmate. Their occupation is noticeable, all four being writers, although the full list comprised those eminent in every walk of life. It is, perhaps, connected partly with this, that as a group they seem to be fairly pure homosexuals, with but little admixture of normal inclination. Perhaps the typical bisexual is more likely to be a man of action, like Peter the Great.

Inverts Among Eminent Men Who Were Lovers of Cats—It is now the turn of eminent cat lovers. From two monographs (4) on cats, I have compiled the following list of names, taking only those who have been dead some time:

Pope Gregory the Great, Hokusai, Tasso, Alfred de Musset, Paul de Kock. Petrarch, Cowper, Wordsworth, Robert Liston (surgeon), Richelieu, Chateaubriand, Théophile Gautier, Dr. Johnson, Sir W. Scott,

Dumas Senior, Shelley, Jeremy Bentham. Of how many of these may inversion be deemed a likely characteristic?

The quest here is much more difficult. To begin, of none can we expect the characteristic we are in search of to be recorded outright. It will be a matter of inferring its presence of features like friendship enthusiasm, aversion to women, physical stigmata of degeneration, etc. And even these may easily escape mention in biographies. Of course, when the distinguished man is a writer his works may furnish evidence. It is noticeable first that none of these cat lovers figure in Hirschfeld's roll of eminent inverts already spoken of. Indeed in three only have any definite marks of inversion been made out: these are de Musset, Gautier and Bentham, although in none is the evidence conclusive. To begin with the last, Bentham, like the other two, was a bachelor; his unsuccessful proposal as an elderly man to a young lady of noble birth was probably dictated by no motive of the heart. Sir James Mackintosh says of him that his devoted friends "more resembled the hearers of an Athenian philosopher than the proselytes of a modern writer." Now it may be coincidence, but of course the Greeks used the words "inspirer" and "hearer" for the two partners in a male homosexual friendship. Bentham employed young men as secretaries. Passages in his writings have a self-justificatory sound, supposing their author to be inverted. Thus on the subject of *Standards of Right and Wrong,* he remarks:

"It is upon the principle of antipathy that such and such acts are often reprobated on the score of their being *unnatural.* Unnatural when it means anything means *infrequent*.....Such an act is *unnatural;* that is, repugnant to nature; for I do not like to practise it; and, consequently, do not practise it. It is therefore repugnant to what ought to be the nature of everybody else."

Again, he writes: "By *atrocity* is.....meant neither more nor less than *odiousness*.....To one set of men, the man who differs from them in some peculiarly tender point bearing relation to religion is the most atrocious character; to another, or to the same, the man who has been drawn into some devious path by the impulse of the sexual appetite."

In a very friendly biography of Gautier (*Ti. Gautier, Souvenirs Intimes,* E. Feydeau, 1874), it is, nevertheless, acknowledged that accusations of inversion were made against him.

De Musset had, of course, great inclination to women, but still there are facts leading one to suspect that he may have been also sexually attracted somewhat to his own sex. He was extremely fond of Michael Angelo's sonnets, which are of course very homosexual in strain. He was very fond, too, of male swimming parties. After leaving Georges Sand in Italy, he brought back with him thence a young male servant. Once for a joke he shaved his moustache, dressed up as a parlour maid, and waited at table.

But this is surmise only, and this part of the investigation must be taken as resulting negatively. Indeed, if we remember Freud's dictum that no mind of abnormal capacity is normal sexually, there would likely be a fair proportion of inverts in any collection of eminent men. Nevertheless, the first result stands, and is enhanced by the fact of there being one trait of male inverts, which will always tell against their being noted as cat lovers. This trait is the habit of frequent travelling. Since reading of this taste of theirs in Hirschfeld's book, I have often noticed its presence recorded in biographies of persons otherwise suspicious of

inversion. Now if a man is always on the move, obviously it will interfere very greatly with his keeping pet cats. That of 31 male inverts, four should be known to be cat lovers, is therefore all the more significant.

Association of Cats With Femininity—There is something highly relevant to either half of our subject, and that is an association with femininity. The mind always associates cats with the woman's world: and male inverts are often very feminine. The more one examines it, the truer and profounder does the former proposition seem. In mythology, cats appertain always to goddesses, not to gods; in legend, to female rather than to male saints. The chariot of the goddess Freya, the Scandinavian Venus and Demeter, was drawn by cats, while Holda was attended by maidens riding on cats. The Egyptian Venus, Bast, was cat-headed. The Roman goddess of liberty was represented with a cat at her feet. The cat in Teutonic legend is sacred to St. Gertrude, in Sicilian, to St. Martha. Even the phrase "Cheshire cat" is derived merely from a habit of dairymaids, who used to turn out cheese in that county modelled in the form of a cat. The two books on cats I have quoted are both by women; women are prominent in the management of cat clubs. In literature, too, cats are inevitable accompaniment to housewives and old maids. Lafontaine has a fable: "Un homme chérissoit éperdument sa chatte.....Il étoit plus fou que les fous." (It would have been nothing remarkable for a woman to dote so.) At his prayer the cat was changed into a woman, and he married her.

Balzac says in his story of the village rector: "No one was in the kitchen except a cat, which revealed the presence of a woman about the house."

But we may perhaps go further than this, and lay our hand on direct evidence that male inverts are attracted by cats. Balzac's character, the old musician Schmucke, had a fine cat for which he reserved a china cup and saucer and a special cushion. It was the envy of all the portresses and he was devoted to it. Now Schmucke soon came to live with another old bachelor of artistic tastes, and their friendship, which lasted till death, is described as being ardent in the extreme. They meet after an absence like lovers. Their landlady remarks that no woman ever loved a man as Schmucke loved Pons. Schmucke called his cat Meinherr Mirr, after Hoffmann's *Kater Murr* in the tale of that name, half of which is a cat's autobiography. Now, although this feline portion is in the nature of comic relief, still there are strong homosexual features about the book. The man who owns the cat has a male friend, with whom he is "ein Herz und eine Seele." There is also in it the story of Walter and Formosus, who are a third couple to Damon and Pythias, Pylades and Orestes. Hoffmann is also the foremost of all authors in his obsession with the "doppelgänger" motive, and Otto Rank has admirably shown in *Imago* how prone notable writers on this subject are to sexual abnormality or neurosis.

Lastly, it would not be surprising if the artist-critic, Wainewright, who murdered his friends for their insurance policies, were an example of the association we are studying. The grounds for supposing this may be most briefly conveyed by the following quotations. The *Dictionary of National Biography* says of his leaving the army in early life—" a severe illness, accompanied by hypochrondia and nervous symptoms, may have contributed to this change of plan." Now in the many biographies of male inverts that I have read in preparing this paper, I have noticed the frequency of such an occurrence; the symptoms are often mostly ocular.

In several instances it has seemed as if the neurosis were caused by a struggle to repress inverted desires, and cured (compare the many parallel examples given by Stekel in his Angstzustände) by indulgence of the same. From the same source we learn: "his white hands were bespangled with regal rings;" "his effeminate manner, thick, sensual lips, and wavering voice, scarcely above a whisper;" "after going to Boulogne, he is known to have spent a considerable time in prison at Paris." His fondness of cats is mentioned. Oscar Wilde (*Intentions*) says of him—"He had that curious love of green, which in individuals is always the sign of a subtle artistic temperament, and in nations is said to denote a laxity, if not a decadence of morals. Like Baudelaire he was extremely fond of cats, and with Gautier, he was fascinated by that 'sweet marble monster' of both sexes that we can still see at Florence and in the Louvre."

Wainewright died of apoplexy, too; his sole companion a cat.

If fondness for cats be entitled to a place among male homosexual traits, the reason will be that it is a woman's taste. My subject aforesaid, the public school coach, had his cat beside him while he poured out tea; which he did, if not, like Compton Mackenzie's inverted author Wilmot (see *Sinister Street*, Vol. I), dispensing similar hospitality, "with a myriad mincing gestures," still with quite unmasculine competence, gusto and deliberation; he liked sweets, too, and smoked only cigarettes. Indeed, the tale of homosexual characteristics has probably not yet been given anywhere with anything like completeness, for the heart of the inverted man seems always reaching out after something womanish, or else recoiling from something masculine. Of him it might almost be said: *Femina est: nihil muliebritatis a se alienum putat.*

BIBLIOGRAPHY.

(1) Published by Allen and Unwin, Museum St., London.
(2) M. Hirschfeld: *Die Homosexualität*. Berlin, 1913.
(3) F. Simpson: *The Book of the Cat*. Cassell & Co., London, MCMIII.
(4) A. Marks: The Cat in History, Legend and Art. Elliott Stock, London, 1909, pp. 80, 88.
F. Simpson: *Loc. cit.*

EDITORIALS.

Conducted by

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MEDICINE AND THE LAY PRESS.

The attitude of the lay press in general toward the regular medical profession has been undergoing an evolution the past decade, changing from an ill-disposed, possibly antagonistic, to a friendly or even propitious, attitude, though we still occasionally find an editor exhibiting an unaccountable hostility to the profession.

With such, we have no desire to "quarrel"—not even to argue—since we feel assured they will, also, "see the light" when they will recognize the rapid strides being made in all branches of medicine, from prevention to cure, and the growing wisdom and skill of its practitioners.

It is regrettable that the lay press often gives more space and greater prominence to charlatanism than to progressive scientific medicine, which may be due largely to the fact that the former is more sensational than the the latter, if it is not so practical; which reminds us of the words of Paul Carus, viz.: "If the quack flourishes, who is to blame, the quack himself, or the public, who prefer his ostentatious services to the work of the quiet, unassuming man who employs no trick to enlarge the circle of his clientele."

Although the lay press may not be actively educating the laity in matters medical, or instructing them in preserving their health, they are at least doing something in a passive way to protect the public from a very pernicious and far-reaching form of quackery in refusing to carry quack venereal disease advertisements. It is recorded that 19,860 of approximately 20,000 newspapers and lay magazines have signified their intention not to carry such advertisements. However, many still carry the advertisements of other forms of quackery as well as of patent medicines, to the detriment of their readers. May we not hope that they will soon recognize the "error of their way" and refuse all such advertisements and devote the space to enlightening the public upon the shortcomings of the one and the fallacy of the other?

It does not appear to the average lay editor that the medical profession is not actuated by selfish motives in striving to protect the innocent public from the quack and patent medicine manufacturer.

Occasionally a layman grasps the true situation and exhibits the courage to "speak out in meeting," as did United States Senator, Honorable Robert L. Owen, in a speech on the floor of Congress, when he said: "Mr. President, the American Medical Association has published at great length scientific and careful analyses of most of the nostrums and patent medicine frauds of this country. They have given wide publicity to it and in that way they have excited the violent animosity and hostility of the patent medicine people, so that the declaration is made by them that the medical profession comprises a trust. In point of fact, if the Amer-

ican Medical Profession comprises a trust and if they are concerned in establishing a Department of Health with a view to preventing sickness, which would be the purpose of the Department of Health, they would be engaged in tearing down their own business; they would be engaged in depriving themselves of their patients from whom they make their living. It would be the only trust in existence which is concerned in diminishing its own revenues and destroying its own financial foundation. Such a trust as that is a very noble trust and one that deserves encouragement."

Again we find a layman with a proper perspective as indicated by the following excerpt from the Minneapolis Journal of June 19, 1913:

"Thousands of men eminent in medicine are now in Minneapolis. The American Medical Association is probably the most wonderful volunteer body in the world. If the same number of army generals were gathered together in one place, curious crowds would swarm after them, merely to gaze on so many eminent killers. If the same number of financiers of equal eminence were to come here, there would be no counting the crowds that would hang upon their footsteps wherever they went.

"The doctors are neither killers nor financiers. They save life. They do it often without hope of pecuniary reward. The altruism of the age is well illustrated in them. The doctrine of service never was better exemplified in the world than by the medical profession today. Why are they not as enthusiastically received as would be as many military captains of high renown? Simply because the idea of service to humanity is not yet quite comprehended; simply because the older trade of taking life still holds more glamor than the newer one of saving life.

"The doctors are not inferior in heroism personally or as a class to the soldiers of the world. They take more chances in their every-day practice than ever a general officer of the army encounters. The sacrifices of life and health made by the modern physician in his work for humanity are not less real, only less dramatic, than the sacrifice of life in war.

"The doctor will come into his own. His heroism will get its reward. Today he is the representative of perhaps the most highly respected profession in the world. He takes precedence of the lawyer, because he deals with life, while the lawyers deals only in property and in the final test men will give all they have for health.

"The most remarkable developments of the profession of medicine and surgery are sealed books to the public. They are not translatable into the vernacular. They are real, and we see the results. We do not know the process. But more remarkable still than all the improvements in surgery, the X-rays and all the germ-fighting discoveries is this vastly greater and more comforting discovery of the spirit of service in the profession itself."

A lay writer of one of our local dailies displays unusual insight in the following beautiful tribute to the philanthropic spirit of the medical profession, under the caption, "The Doctor's Aspirations":

"We can not help drawing the conclusion that doctors are the most self-sacrificing class of men in the world; else why do they persist assiduously and without intermission in pushing bills for national and state boards of health, the object of which is to prevent sickness, when it is by sickness that the physician earns his not too affluent living?

"He hails every discovery that lessens human pain and physical affliction with as much joy as his patients, even more, and when he takes time to speculate on what should constitute the medical millennium he pictures some future era when every ill will have been excluded from the world and the flesh has reached a degree of perfection which has been represented as only possible for the spirit; in that glorious day the doctor will be ready to spread his angelic pinions and wing away to that eternal reward which he has so justly won.

"The medical profession doubtless feels with every other the enthusiasm of conquest. To put to flight every disease, to pursue every germ to its farthest lair and there exterminate it, is as great an achievement as spearing dragons in St. George's day.

"Preventive 'medicine' is the doctor's goal. Let him have his way, and no one would ever need pills and plasters; and in keeping all maladies at arm's length, there is no doubt he would have occupation enough to keep him busy all his waking hours, and there would be restored to him his rights of repose, now so often broken up by our calls for his aid and comfort."

Notwithstanding such glowing tributes, the physician not only meekly continues his search for a panacea but seeks a prophylactic for all diseases—even hopeful of discovering the "elixir of life," if not the fountain of perpetual youth, with which he may, forsooth, "heap coals of fire" upon those engaged in disparaging his rapidly increasing efficiency.

D. S. B.

DELAY IN PUBLICATION OF THE ALIENIST AND NEUROLOGIST.

The editors regret exceedingly the very tardy appearance of recent numbers of THE ALIENIST AND NEUROLOGIST which is due to "various and sundry" extraneous causes without the jurisdiction of the editors, who, like the reader, can only hope that the abnormal conditions resulting from the World War will soon be adjusted; until then, we beg the indulgence of our readers who are assured that we are yet alive, vigorous and "kicking"—all without avail, however, though we hope to demonstrate their effectiveness before long.—D. S. B.

RED CROSS OPERATES SPECIAL SERVICE FOR MENTAL PATIENTS.

The American Red Cross, as a part of its activities on behalf of patients in the United States Public Health Service hospitals, is cooperating with the government in a special service for mental patients.

Weekly lists of all cases of mental disease occurring among army men under treatment in the United States Public Health hospitals are sent to all divisions of the Red Cross. The division office in turn submits the names of the men to the Red Cross Home Service secretaries in the soldier's home town, who gather information concerning each man's family connections, the surroundings of the men in their homes, and the influences to which they were subjected in family life. This information is forwarded to division headquarters where the Bureau of After Care sends it to National Headquarters.

This enables the hospitals to administer the most effective treatment in mental cases—that is, based on a knowledge of a man's previous life, and an understanding of the subjects which are most likely to strike a responsive chord in the patient's mind.

The United States Public Health hospitals receives former service men who have been discharged from the army hospitals apparently in good health, but who suffer a relapse or reversion after they have doffed the uniform and are no longer entitled to care in an army hospital. Here the Red Cross, at the request of the Surgeon-General, is carrying on Home Service and Recreational Activities modeled on the very effective work done in the military hospitals during the war and post-armistice period.

From the first the Red Cross, in its athletic and recreational program in the hospitals, has arranged certain, specially-devised features for the psychiatric patients. At Fort Sam Houston, Texas, a special recreation room has been equipped in order that these men may be treated under a different method than that employed in the ordinary ward. The athletic director, F. M. Marley, also, has a special class in the gymnasium every day and has devised a set program of gymnastics for the psychiatrics. They start with the medicine ball. Then all the men have their turns at the punching bags, after which they rest for a few minutes and form for the fox exercise. Shadow-boxing and calisthenics employ the next twenty minutes and a 220-yard jog around the gymnasium concludes the work-out.

Everything the Red Cross is doing for the men in the gymnasium is for a definite purpose, and an increased mental alertness is almost certain to result from the stimulating games and exercises.

Doctors report that the psychiatric patients are the best-conditioned men in the hospital, and they are always eager to play ball and other games.

Checkers have played a valuable part in the treatment of the psychopathic patients. These men have become interested in the game almost to the degree of a habit. The corps men on duty with these patients find this an ideal way to relieve the strain the men are under. It also gives them the desired mental exercise.

SELECTIONS.

CLINICAL NEUROLOGY

Traumatic Neurosis and Traumatic Hysteria—Michael Osnato, *Neurological Bulletin of Columbia University*, September, 1919, from a study of 175 cases divides the functional nervous reactions to injury, into two groups, possessing important differentiating characteristics, viz.: (1) traumatic neurosis in which the reaction is apparently caused by fear with immediate injury to the nervous system by actual trauma or later injury by sleeplessness, restlessness and a general physico-psychical depression. Most of those individuals are essentially normal, the injury being almost entirely responsible; and (2) traumatic hysteria in which the reaction to the injury probably is not determined by any primary or secondary pathological considerations directly due to the injury, but is entirely an instinctive maladjustment in individuals who are both physically and mentally inferior.

Of the 175 cases, 102 were diagnosed as traumatic neurosis and 73 as traumatic hysteria. The average age of the latter group, 36½ years; 54 were married, 14 single and five widowed. The economic difficulties which the married individuals experience are undoubtedly a predisposing factor in the precipitation of these conditions. Besides married individuals are predisposed to difficulties in the adjustment of their sexual and other instincts which single individuals are not so apt to experience. In the cases of traumatic neurosis, the only psychological factor at work appears to be the emotion of fear and the instinct to flee from an unpleasant situation. In too many of these cases of traumatic hysteria to make it unimportant, difficulties were found with the handling of other instincts and emotions, particularly in the sexual life; besides there was almost invariably found previous mental or physical abnormality. This was not true in the cases of traumatic neurosis. Despite the fact that very few of these individuals admitted having been nervous before the accident, careful questioning brought out in the history undoubted signs of important physical and mental difficulties. Thirty-three of these patients had varying periods of unconsciousness, a history of which was unobtainable in 40. In the cases of traumatic neurosis the majority of the patients gave a history of having been unconscious. The onset in the cases of hysteria was sudden in 56, and in the remainder the average period of incubation, as it might be called, following the date of injury, was ten days. In this regard the averages are the same as in the cases of traumatic neurosis. There is a marked difference in symptomatology. Headaches were complained of in only 32 cases out of 73; in the cases of traumatic neurosis, 83 patients made this complaint out of a total of 102. Dizziness was complained of in 19 cases as against 80 in the latter condition. The nature and severity of the injury was apparently unimportant in deciding the type of reaction. There were head injuries in 54 cases and back injuries in 13. In the remainder of the cases the injury was to one of the extremities. The blood pressure readings averaged 125 systolic and 85 diastolic. While the onset of the symptoms was sudden in many cases of traumatic hysteria, it was in-

variably found that many months passed before the total maximum disability was reached. It was almost invariably true that while one or two symptoms were complained of, almost immediately following the accident, these became much worse gradually and other symptoms were added until finally the maximum disability was reached at or just before the time arrived for a consideration of these cases by the tribunal by whom the award was to be made. In the 21 cases which it was possible to follow up after litigation was ended the history was invariably obtained in all except one case, that the disability gradually receded. One patient did not resume work until nine months after the award was made. In one case where this gradual reduction of disability did not occur, recovery from the symptoms complained of took place within an hour after the award was made. In all of these 21 cases, while the actual disabling symptom or group of symptoms disappeared, the patients persisted in a number of subjective complaints and insisted that they were not entirely well, i. e., the symptoms were relieved but the hysterical character was not changed. It was possible to improve by treatment a great many of the patients with traumatic neurosis and a small number even recovered and went back to work before their cases were called up for settlement. However, no noteworthy improvement or cure occurred in any case of traumatic hysteria before the final adjustment of the litigation. No case that began with the symptoms grouped under the term traumatic neurosis developed the symptoms grouped under the term traumatic hysteria. Almost invariably it is possible to find in the actual symptom complex presented by the hysterical patient a clew to the mechanisms operating to produce the disability. In traumatic neurosis the symptoms complained of were almost constantly the same in each case, which leads to the belief that the former group of cases is probably based on a real anatomical and physiological pathology, whereas the hysterical group is probably almost entirely psychologically determined. A noteworthy observation is the difference in the mentality and intellectuality of these patients. The traumatic neurosis group are more like average normal individuals who have been tired and worried and frightened. The hysterias were essentially abnormal personalities.

They showed great emotional instability. Most of them were definitely asocial, many showed mental retardation up to definite degrees of feeble-mindedness, many were shy, reserved and sensitive from early childhood, showing great inability to adjust themselves to the ordinary stresses and experiences of life. Patients grouped under the heading of traumatic hysteria gave the impression of insincerity and deliberate misrepresentation, contrary to those who suffered from traumatic neurosis. In a great many of these patients the mechanisms at work were so close to their conscious thinking that one had difficulty in differentiating them from true malingerers. In this type of case, the greatest degree of mental enfeeblement was found. The conclusion appears that in nearly all the cases of traumatic hysteria, the desire to obtain an advantageous settlement for the injury, motivates the symptom complex presented. Often this central nucleus in the psychological constellation is obscured by other difficulties. The instinct of acquisition and the opportunity to play a powerful role and focus the attention of one's fellows on oneself, undoubtedly helps to produce the symptoms, although these factors are reinforced by compromises with other instinctive tendencies.

The most frequent maladaptations to instinct of this later type, are those of sex. As examples the following cases are instructive:

Case 1. Pole, aged 40, married 25 years; no children; wife a robust, comely Polish woman, of virile and dominant type. She had always made the decisions of the family and imposed her will without resistance from the husband. For many months before the injury the patient had been weak sexually, "no good" as she expressed it. July 27, 1918, a plank carried in the hands of some fellow workman struck him in the back while he was in a stooping posture. He immediately fell to the floor unable to move his lower extremities and was taken home in an automobile. Thereafter he suffered from a persistent astasia-abasia. He complained bitterly of tenderness and pain in the spine and back and was treated for many months for a possible injury to the spine. It was only after he was examined by a competent orthopedist and many X-ray examinations were made that a neurologist was called in. At the time of the examination extensive functional anesthesias were found, but no organic neurological sign was discovered. There was no disturbance of the bladder or rectum and the patient complained at the time that I saw him, 11 months after the injury, that he had completely lost sexual power since the accident. He feared that his sexual power had been completely destroyed forever. No treatment ever did him any good.

While the instinct of acquisition played a minor role in this case, it being overshadowed in importance by the sexual difficulties mentioned, nevertheless it was the central nucleus, the heart of the trouble, for only by ascribing his physico-sexual debility to the injury could he justify the illness, and only by being paid well could he propitiate his spouse and reassume any importance in her eyes. The instinctive maladaptations here are those which this patient showed to sex, the instinct of acquisition and the instinct of positive self feeling.

This man was the usual dull, stupid, uninteresting type, lacking in education and possessed naturally of poor mental stuff. During his stay in the hospital he brightened up considerably and was apparently on a fair road to recovery but suddenly relapsed after his wife's first visit and never improved. She saw him daily after her first visit.

Case 2. Male, of feminine make-up physically, whose voice and attitude of mind were very suggestive of womanly qualities. He suffered from astasia dysbasia and assumed an attitude suggestive of the "hunch back" at all times. Critical examination was made to exclude organic disease or injury to the spine and being under suspicion, he was followed by detectives for weeks, but was never found in any excepting the above described attitude. One of his most troublesome symptoms was his irritability toward his wife. They had been married for nine years and had one child eight years old. His wife gave the history that for several years the sexual act had become distasteful to him and that he had left her on several occasions and had maltreated her. Since the accident the patient complained of complete sexual impotence. There was a feminine distribution of fat and hair and general physical make-up and an infantile development of the sexual organs.

From these it is apparent that aside from the possibility of gaining something material from the accident sustained, an excuse was offered them to avoid adjustment of sexual matters which were either distasteful or impossible for them. It is not an unimportant coincidence that these two cases were the most troublesome and most obstinate of the series.

In the following cases dissatisfaction with the job undoubtedly motivated the symptoms to a considerable degree.

Case 3. Aged 37, married five years, no children, developed a hysterical palsy of the right upper extremity after carrying a heavy picture from the store where he was employed for a distance of about one mile. He had carried similar frames many times before without trouble but on the day of the onset of his symptoms, after he had delivered the frame he found that he could not move his right upper extremity and complained of pins and needles and burning in the right shoulder, hand and arm. Examination excluded organic disease or injury. There was complete anesthesia of functional type in the affected extremity. The history brought out the fact that this patient considered himself a high class artisan, and in his native country had been a man of some importance, besides being a painter of talent. Since coming to this country he had to do what he looked on as unworthy work, particularly did he object to carrying his work to prospective customers. The day the palsy was first noticed he felt bitterly resentful at what he considered as indignity. No amount of reassurance concerning the non-organic nature of his condition ever succeeded in improving him much and six months after the onset of the trouble he was still incapacitated. This man was considerably under weight and somewhat anemic, but otherwise physically well. Mentally he was acutely sensitive, resentful and quite irritable.

Case 4. Irishman, aged 24, single, in this country five years. In Ireland the father was a well-to-do landowner and the boy a student in an Irish university. He came to this country after a quarrel with his parents and lived with a brother in this city. He was forced to work and made a rather precarious living. The life was very distasteful to him. He made no serious whole-souled efforts, was quite depressed and for some time before the accident he had been very unhappy. The injury consisted of a fall of about 10 feet without loss of consciousness. No evidence of injury to either the vault or base of skull. Became hysterical and had a convulsive attack and suffered from astasia-abasia when about to be discharged from hospital. Examined a number of times by several competent neurologists and all agreed to traumatic hysteria. As soon as settlement was arranged, the patient began to improve rapidly and whereas he had not stood alone for many months was able to go to the steamer and sail for Ireland. Since, the boy has shown very great improvement and is now living with his mother and father.

Many of these patients suffered an actual organic injury which served as a basis for the hysterical manifestations which follow. This was true in almost two-thirds of the cases. Several illustrative cases are reported.

Cases are, also, reported to demonstrate that the psychological determinants in certain cases of hysteria rise so close to consciousness that the suspicion of malingering is often justified.

GOITRE AND PSYCHOSES—Norman Routh Phillips, *Jour. of Mental Science,* October, 1919, divides all the various forms of goitre into two main groups, *viz.*, Group I, those forms which produce hypothyroidism; and Group II, those producing hyperthyroidism.

Group I. Hypothyroidism occurs:

(*a*) Sometimes as a later stage in parenchymatous goitre, the initial activity of the gland being followed by a phase of secretory exhaustion.

(*b*) In chronic colloid goitre—as a result of the flattening and atrophy of the epithelial cells from distension of the vesicles with excess of colloid material.

(*c*) In adenomatous, fibrous, and cystic goitres, probably as a result of mechanical interference with the proper functions of the gland.

(*d*) Sometimes as a late stage in Graves' disease from fibrous degeneration and atrophy of the epithelium.

Group II. Hyperthyroidism occurs:

(*a*) In the early stages of parenchymatous goitre as a result of the hypertrophy of the gland which arises in response to a call for increased thyroid secretion.

(*b*) In Graves' disease where there is active hypertrophy and proliferation of the epithelial cells, with the formation of new vesicles lined with cubical cells and containing colloid.

(*c*) In a certain proportion of old colloid goitres the atrophied epithelium taking on renewed growth, with the same active cell-proliferation and formation of new vesicles mentioned in the last variety.

The author calls attention to the frequent association of hypothyroidism with goitre and the mistake often made that enlargement of the thyroid gland necessarily points to hyperfunction.

All cases of goitre, both of the "simple" and of the "exophthalmic" type, are liable to undergo changes in the size and shape of the thyroid gland, as well as in the signs and symptoms by which they are accompanied (whether these latter be of a somatic or mental character); so that a case of apparently simple goitre may sooner or later develop all or many of the signs indicative of Graves' disease, *e. g.*, exophthalmos, tremors, palpitation, etc., as well as the mental instability so characteristic of that disease; a case of Graves' disease, too, is liable to undergo changes, *e. g.*, the exophthalmos, tremors, palpitation, etc., may disappear —so that if one were not acquainted with the history of the case one might be tempted to make a diagnosis of "simple goitre."

The author compares the psychic syndrome of typical hyperthyroidism as seen in Graves' disease with the mental symptoms of typical hypothyroidism as seen in the myxoedema of adults. The acceleration of the mental processes in the former is in marked contrast with the retardation which obtains in the latter.

Perception is impaired in Graves' disease, and hallucinations are frequent.

Memory is impaired both in myxoedema and in Graves' disease.

Attention is difficult to obtain in myxoedema, whereas it is easy to obtain but difficult to fix in Graves' disease.

Association of ideas is very slow in myxoedema, whilst it is rapid in Graves' disease owing to the distractibility of attention.

Emotions—The myxoedematous is dull and indifferent. In Graves' disease there is instability, irritability, and extreme irascibility.

Capacity for mental work is much impaired in myxœdema as a result of apathy and indifference. In Graves' disease the distractibility of attention prevents concentration and perseverance—qualities which are essential to the performance of mental work.

The reactions are rapid in Graves' disease, whilst in myxoedema they are sluggish.

Sleep—In myxoedema there is somnolence. In Graves' disease there is insomnia.

Etiology of Goitre—Heredity is a most important factor; an emotional or neurotic temperament is a predisposing cause. Women are much more liable to this affection than men.

Goitre may develop as a result of emotional states, *e. g.*, fear, anger, anxiety, etc., prolonged mental or physical stress, hygienic errors, deficient or improper food, puberty, menstruation, pregnancy, or sexual excess. It may, also be caused by a number of diseases and toxaemias, *e. g.*, rheumatic fever, measles, scarlet fever, pyorrhoea, tuberculosis, etc.

The author presents the following summary:

(1) Goitre is frequently associated with the psychoses—in a mental hospital receiving no cases of idiocy, one patient in every eight having some thyroid enlargement.

(2) Goitre is, at some time in the patient's history, accompanied by a condition of hypo- or hyperthyroidism; either of these conditions is capable of inducing a state of auto-intoxication with mental symptoms.

(3) The nature of the psychosis is, in some degree, determined by the form of the functional disturbance of the thyroid gland, *e. g.*, hyperthyroidism is usually associated with states of excitement, agitation, etc. (*e. g.*, manic-depressive insanity), whereas hypothyroidism is more often associated with states of apathy and indifference (*e. g.*, dementia praecox.)

(4) The treatment of the psychoses associated with goitre depends to some extent on the nature of the functional disturbance of the thyroid gland. If the signs point to hypothyroidism, treatment by thyroid extract should be instituted. If hyperthyroidism is present, the treatment should be directed to the removal of the mental element, which is now admitted to be of great importance in the etiology of this condition. The only satisfactory method of accomplishing this is by the employment of psychotherapy.

Functional Diagnosis of Polyglandular Disease in Acromegaly and Other Disturbances of the Hypophysis—C. P. Howard, *American Journal of the Medical Sciences*, December, 1919, No. 6, Vol. CLVIII, page 830, studies six cases, a summary of which are as follows:

Case 1. J. J., aged 31 years; farmer. Symptoms first of hyperpituitarism, followed later by hypopituitarism; characteristic changes in acra; somnolence; polyphagia; optic atrophy and divergent strabismus; sugar tolerance increased; sella turcica enormously enlarged; transsphenoidal operation attempted, but interrupted because of patient's condition; death three months later, with symptoms of right-sided hemiplegia; autopsy revealed an enormous pituitary tumor, with marked cerebral compression; atrophy of islands of Langherhans; atrophy of testes; slight cystic degeneration of the thyroid gland.

The adrenalin conjunctival test was strongly positive for adrenal insufficiency, while both subcutaneous tests spoke for normal function. The pituitrin conjunctival and both subcutaneous tests suggested a hypopituitarism.

Diagnosis—Acromegaly: round-cell sarcoma of pituitary gland.

Case 2. Mrs. A. W., aged 52 years; female; amenorrhea at thirty-nine years; severe frontal headaches since forty-eighth year, followed

by failure of vision, enlargement of head, hands and feet, profuse night-sweats; typical facies; acra characteristic; hypertrophy of genitalia; fundi negative; sella turcica enlarged; slight glycosuria, with much decrease in sugar tolerance; normal renal function. Adrenalin conjunctival and subcutaneous tests indicate hypofunction of adrenals; pituitrin tests doubtful; posterior lobe caused subjective improvement.

Diagnosis—Acromegaly; hyperpituitarism.

Case 3. Mrs. O. H., aged 47 years; symptoms for eight years; typical facies; slight goitre; acra much enlarged; divergent strabismus; greatly enlarged sella turcica; glycosuria; hyperglycemia; adrenalin conjunctival test spoke for a normal and the subcutaneous tests for a hypofunction of adrenals. The pituitrin conjunctival test was markedly positive, while of the subcutaneous tests, the blood-pressure one was normal and the blood picture within possible normal limits.

Diagnosis—Acromegaly; hyperpituitarism.

Case 4. James W. R., aged 29 years; linotype operator; no localizing symptoms; diagnosis of hyperpituitarism from tumor of hypophysis made because of occipital and temporal headache, double papilledema, distorted sella turcica and decreased sugar tolerance; transsphenoidal decompression, followed in two weeks by death; autopsy revealed flattening of hypophysis from greatly increased intracranial pressure, which had thinned out even the sella; microscopically hyperemia of the entire hypophysis, with hemorrhage by diapedesis into pars nervosa. Adrenalin conjunctival test and one of the subcutaneous tests spoke for hypofunction of adrenals. All three pituitrin tests were normal.

Diagnosis—Sarcoma of the occipitoparietal lobe.

Case 5. Miss L. K., aged 16 years; malaria and typhoid fevers in childhood; periodical diplopia, with headache, nausea and vomiting; amenorrhea at fourteenth year, followed by enlargement of breasts and rapid gain in weight of forty-two pounds; nycturia; facies and figure of hypopituitarism; convergent strabismus; transient glycosuria and marked decrease of sugar tolerance; sella turcica small; adrenalin conjunctival and subcutaneous tests spoke for normal adrenal function. The pituitrin conjunctival and subcutaneous tests were also within normal limits.

Diagnosis—Dystrophia adiposogenitalis; Froehlich syndrome.

Case 6. Mrs. M. L., aged 34 years; obesity; glycosuria; marked family history of obesity on maternal side and in sisters; amenorrhea; obesity; headaches; nycturia; glycosuria; signs of tertiary lues and old pelvic cellulitis; Wasserman negative; normal facies, normal hair except for hirsuties over face, slender extremities; sella turcica not enlarged; adrenalin conjunctival and subcutaneous blood-picture tests spoke for normal function of adrenals. The diminution of 14 mm. in systolic pressure cannot be explained. The conjunctival and subcutaneous pituitrin tests were normal.

Diagnosis—Dystrophia adiposogenitalis; Froehlich syndrome.

The determination of the sugar tolerance is as yet the most accurate and only scientific method for an estimation of the activity of the internal secretion of the hypophysis, thyroid gland and pancreas. It is not so long since we first appreciated the frequency in hyperthyroidism of an alimentary glycosuria or even of a frank glycosuria, whereas in hypothyroidism a normal or increased sugar tolerance was observed.

These studies justify the following conclusions:

1. Secondary hyperpituitarism may result from a greatly or rapidly increasing intracranial pressure, as in Case 4 of this series.

2. That the determination of a decrease in the sugar tolerance in the presence of other symptoms of disturbance of pituitary function justifies a diagnosis of increased activity of the pars intermedia.

3. That the adrenalin conjunctival test may be of positive value in certain cases of dyspituitarism in demonstrating a hyppofunction of the chromaffin system.

4. That the subcutaneous adrenalin test was only of doubtful value in both the normal and diseased cases studied.

5. That both the conjunctival and subcutaneous pituitrin tests were too equivocal to be depended upon for studying the functional activity of the hypophysis.

6. That the internal administration of the pituitary extract of either the whole gland or the anterior or the posterior lobes appears to exert no definite influence upon the symptomatology of the disease.

Hysteria Simulating Brain Tumor.—I. S. Wechsler, *New York Med. Jour.*, Vol. CX, No. 21, p. 844, November 22, 1919, reports the case of a young unmarried woman of twenty-three who suddenly began to have spells, lasting a few seconds up to a minute, during which she lost the power of speech and had weakness of the right hand and arms. She became dizzy, more on looking to the right, and felt nauseated. For two weeks from the date of onset she suffered from headaches. During the spells she knew what she wanted to say, understood everything, but could not speak. The spells became very frequent; the patient became drowsy, slept a good deal and the weakness in the right upper extremity became marked. The whole condition had lasted one month. The past and family history were apparently negative.

The physical examination showed the following positive signs: Slight right apraxia, interference with handwriting, temporary motor aphasia during the spells, slight diminution of strength in the right hand and concentrically contracted fields of vision. In spite of the absence of the more pronounced symptoms of brain tumor, that condition was strongly suspected. Hysteria was ruled out mainly by the fact there seemed to coexist an aphasia and right sided motor paresis—a true anatomical condition which is never seen in that disease.

Gradually the spells increased in frequency, yawning became frequent, the somnolence deepened, the patient became "dopey," twitchings appeared in the fingers of the right hand, she began to drag her right leg and the apraxia in the right hand became more marked. A consultation with another neurologist and brain surgeon only confirmed the diagnosis of brain tumor, though operation was deferred for the time being.

The condition kept up for several weeks. She was lost sight of for two months, then presented herself completely cured, thanks to the sudden and magic efficacy of some herbs which a less "learned," but more sensible, physician prescribed. The spectacular recovery and a little analysis left no doubt as to the functional nature of the condition. The patient had for years suffered from an obsession that she was not a virgin, that while a little girl of seven she had been deflorated by a little boy, and that dire consequences would result should the prospective husband discover her disgrace.

The case is reported because, contrary to the general conception that hysteria never gives exact anatomical symptoms, it simulated an organic lesion of the left motor area with aphasia and right sided paresis—a pure anatomical form, and yet it proved to be hysteria.

MENTAL AND NERVOUS STATES IN CONNECTION WITH THE WAR AND THEIR MECHANISM.—Sir Robert Armstrong-Jones, *Canada Lancet*, December, 1919, prefaces his study by the recognized division of the element of consciousness into three categories, viz.: cognition, under which comes knowledge; feeling, which includes pleasure and pain; and thirdly, the will, or conation, which is the tendency to act, all of which he clarifies by simple illustrations and describes the normal development of the mind.

These three groups of elementary mental units group themselves into "complexes," some of which conflict with others and tend to become repressed, when they may become opposed to the personality or ego finding an outward expression, being thus sublimated, as the term is, into a sensory, motor, sympathetic, or even a mental outlet. Normally, the complexes balance each other and tend to equilibrium, or if an emotion is prominent, it tends in a normal person to become neutralized by the varied and complicated associations of the daily life. Not so with the susceptible person, who is disposed to break down from overstrain; the emotions then become motives to action, and bring new ones in their train, each connected with some of the natural instincts or some new desire. The strongest desire in human beings, and therefore the most forceful as motives to action, are those based upon the instincts, and the most dominant instincts are those of self-preservation, which help to avoid danger; those related to the feelings of hunger and thirst, to the search for warmth, and to that of sex. Associated with these deep-rooted instincts are special feelings and emotions which are themselves springs to action.

In the normal person the development of the Will is acknowledged to be a process of great complexity. It probably begins with an act of attention, and extends gradually so as to exercise a control over bodily movements, and with its growth is that of the reason and the imagination, so that acts may be brought into rational order, and in this way the individual comes to exercise his conduct for permanent ends, and to act from fixed principles, thus developing his definite permanent character. In disease or under some great overwhelming strain, or through a stress of lesser severity if long continued, from fatigue or exhaustion there may be, and often is, a tendency for groups of ideas or "complexes," as they are called, to become dissociated, such a dissociation or repression tending to occur chiefly and mainly in connection with some past painful idea. These ideas tend to carry with them certain definite emotions, which, however, cannot be ascertained, because it is believed that they are only unconsciously active, never themselves arising into consciousness, but being transferred or "sublimated" into some other form of expression, the difficulty experienced in identifying these causative emotions being due to what has been described as the mental "resistance" of the individual, which prevents the hidden links between conscious and unconscious processes from being reached.

One special method of discovering these hidden links of association

is stated by its advocates to be by "psycho-analysis," which discovers, through the free association of ideas in the mind, what the hidden emotion may be and whence it proceeds.

Mind implies the sum total of all conscious processes experienced by any person; but there are, in addition, in every individual mind certain tendencies or dispositions which are inherited, and certain others that are acquired through past experiences during infantile and child life. Two aspects, therefore, enter into the conception of Mind: first, the immediate conscious processes; and, secondly, the various conative tendencies to act. The latter may not involve actual consciousness, so that we have, broadly speaking, subjective consciousness, when everything is conscious, and objective consciousness, viz., things realized by the mind, which include the dispositions, inclinations and tendencies that are unconscious, yet which definitely affect the flow of mind, and without which the mind would not be what it is.

The author defines "neurosis," "psychosis" and "psycho-neurosis," the latter of which should be confined to functional nervous diseases with predominantly mental symptoms, caused by emotional disturbances. The term is mainly applied to hysteria and the various hysterical conditions, which are characterized by lack of control over the emotions and actions. They are generally of mental origin caused by some prolonged mental strain in predisposed persons. There is a tendency for any abnormal mental experience to be reproduced, with all its original mental and physical phenomena, when any idea or emotion related to the original experience is brought back to the mind by association; hence the terms *association psychosis* and *association neurosis*.

Psycho-pathetic is a term with a double if not a multiple meaning. Strictly speaking, it should only relate to mental disorders; a psychopathetic family history is one with a record of insanity or some of the psychoses in one of its members. But a psycho-path has been described, not only as a person who is or has been suffering from mental disease, but as a person who has an inborn tendency to develop insanity, or who has an instinctive or inherited aptitude to commit grossly immoral or perverted acts. The term *neuropath* should likewise be limited to those who have a history in their family, or who themselves have suffered or tend to suffer from functional nervous disease.

Of the psychoses, two in particular are common under war conditions, one (*a*) is described as *anxiety psychosis* (often called anxiety neurosis) which is a functional mental disorder, characterized by depression and mental restlessness brought about by anxiety or continued depression, and (*b*) *exhaustion psychosis*, or *psychasthenia*, which results from long continued insomnia, fatigue, strain, alcohol or other toxins; the only distinction between them is the agitation and restlessness connected with the one as compared with the more profound asthenia in the other, yet both may have the same factors of causation—an operation, for instance.

Hysteria practically covers the whole field of the psycho-neuroses, and may be considered to be synonymous with it.

A clinical picture of the psycho-neuroses, of necessity functional, involves two presentations: (*a*) the psychoses, viz., abnormal mental states which have no definitely ascertained organic basis; mania, melancholia, psychasthenia (which Janet separated from hysteria), confusional and obtusional states, dementia precox, paranoia, and the rhythmic

or alternating types; the so-called manic-depressive mental types, and (*b*) the neuroses. The two main groups of the neuroses are (i) the great class of neurasthenics, most of them showing preoccupation and anxiety, and the (ii) still larger class of hysterical cases, characterized mainly by sensori-motor disturbances and mental heedlessness when contrasted with the neurasthenics; so pronounced have the opposed mental states been that the hysterical patient has been called the optimist, and the neurasthenic the pessimist. The now disused term "shell-shock," without any clear connotation, forms a wedge between the two with its point in the neurasthenic class and its base well into the hysteric.

Hysteria is the all-pervading and sensational psycho-neurosis characteristic of the war, one with its tripartite symptoms expressed (*a*) in the voluntary system as sensori-motor disturbances, (*b*) in the involuntary system as trophic, vaso-motor and secretory disturbances, and (*c*) in the psychical system as amnesias, suggestibility, emotional instability, and loss of will power.

The production of hysterical symptoms are thus explained: Some repressed idea or a group of ideas (complex) with its emotional side occurs to the conscious mind from within (auto-suggestion) or from without (hetero-suggestion), but it is rejected, repressed, or submerged into the unconscious mind because it is unconventional, unethical, or disapproved of. There, after an interval (latent period, period of incubation, meditative period, contemplative period), it begins to give rise to a reaction and forces itself in an outward expression, again uninhibited by the conscious mind. This outward expression is the hysterical stigma, and it is an epiphenomenon or an accident of the emotional feeling.

When the symptoms observed fulfilled the desired wish, they are regarded as a "defense mechanism" against the condition feared in the mind, and the method of securing them unconsciously then becomes the "defense reaction." The same mechanism is at work when a man loses the use of a hand, an arm, a leg, or a foot, as also when he is mute, or deaf, or becomes temporarily blind. The paralysis is a dissociation from consciousness of the power to move a limb, in the same way that blindness is a dissociation of the power to see retinal impressions, and aphonia a dissociation of the faculty of vocal expression.

The psychoses of the war are usually divided into (i) those which have been actually caused by stress, strain, fatigue or exhaustion consequent upon active service; and (ii) those which were latent but have been kindled into activity on account of the war, such are general paralysis, dementia precox, some of the milder forms of amentia, ordinary mania, melancholia, for some of these and epileptics, having been previously ill, were passed on recovery into the army, where the strain only aggravated their previous mental weakness.

Before the armistice the number of cases presenting mental symptoms numbered over 20,000, and every form of mental disorder, except those incident to sensibility, was met with, but particularly the milder confusional type, with sluggish ideation, mental torpor, and forgetfulness. The chief symptom in these mild cases was the inability to fix the attention (a-prosexia), associated with loss of memory, which is probably the next most common symptom, and is of the anterograde amnesia, or recent loss, and rarely a loss for remote events or the retrograde type.

PULSE PRESSURE IN TRAUMATIC CEREBRAL COMPRESSION.—Harry M. Armitage, *Pennsylvania Medical Journal*, November, 1919, Vol. XXIII, p. 58, observes that the constant reference to the value of the systolic pressure in the diagnosis of cerebral compression and the failure of this symptom, clinically, to verify these claims, commands, breeds and justifies an inclination on the part of surgeons generally, to disregard the estimation of the blood pressure in head injuries and thus overlook one of the most important methods of diagnosis in this class of cases.

In many head injuries with visible symptoms of cerebral compression, an estimation of the systolic pressure will reveal it to be 150 to 160 degrees, higher than normal, possibly, but not enough to be of any diagnostic importance in determining whether trephining is indicated or not.

The systolic pressure is made up of the diastolic plus the pulse pressure, the pulse pressure being the most important of the three. It has been proved by large numbers of cases that the systolic pressure is not constantly high in cerebral compression.

The normal relationship of the pulse pressure to the diastolic, to the systolic, is as one is to two is to three.

In cerebral injury with resulting compression, this normal relationship is tremendously distorted.

Pulse pressure at some stages in compression is exceedingly high and frequently is found to be higher than the diastolic pressure. The diastolic pressure remains proportionately low. This study of the component parts of the systolic pressure has proved that where the systolic pressure is high it is due to a high pulse pressure, and a relatively low systolic pressure is due to a low diastolic pressure, but the pulse pressure still remains high.

The types where the pulse pressure is not high are those with a depressed fracture or blood clot without medullary symptoms and those in the terminal stages where compensation on the part of the arterial tension shows signs of failure with rapid pulse, irregular cardiac and respiratory efforts, deep coma, complete muscular relaxation and widely dilated pupils; this is Kocher's fourth stage. Also, in severe fractures of the base, with widespread hemorrhage, the equalized pressure exerted against the cerebrum delays the bulbar symptoms and when they do appear the patient passes rapidly through the early stages into the last stage with low blood pressure and rapid pulse, due to the great severity of the injury.

The vital centers in the medulla are the main factors to be considered in acute compression and the indications for operation depend on the symptoms which are intimately related to medullary compression to a greater extent than upon any other factor.

When the pressure against the medulla reaches the arterial pressure, death must ensue in consequence of anemia of the vital centers. On the latter statement hinges these investigations in blood pressure.

The arterial pressure referred to does not imply a normal arterial pressure, for, when external pressure against the medulla begins to appoach or equal the arterial tension, the anemia stimulates the vasomotor center, and the medullary centers are again supplied sufficiently with oxygenated blood. The progressive rise in tension of the circulating blood is due to constriction of the splanchnic field and the area near

the surface compensates by dilating, producing a low diastolic pressure in the brachial artery.

The major, or bulbar, symptoms of cerebral compression are generally given as the rhythmic respiration of the Cheyne-Stokes type, which depends on the fluctuation of the raised arterial tension, the slowed pulse, and high systolic pressure. This latter should be changed to high pulse pressure, as this appears before a rise in the systolic pressure manifets itself. If one waits for the systolic pressure to increase to any marked degree, the patient will be suffering with that much greater medullary compression and is very likely to be in a comatose stage from which he will never arouse.

The diastolic pressure represents arterial resistance or potential energy. The pulse pressure is the amount of pressure exerted by the heart during systole in excess of the diastolic pressure and measures the excess of dynamic over potential energy, which produces the distention of the arteries recognized as the pulse.

The rise in the pulse pressure in traumatic cerebral compression, is due to the increased amount of energy required by the heart to force the blood through the constricted splanchnic area and to the slowing of the pulse.

The vagal pulse of cerebral compression has always been described as a full, bounding, slow pulse. The degree of fullness and the bounding character can be measured accurately by estimating the pulse pressure and, while the diagnostic significance of a slow pulse in cerebral compression is as old as the literature in surgery, it has remained for the sphygmomanometer to prove the importance of the pressure of the pulse.

That this is not a medical hypothesis or abstraction, but a clinical fact, is proven by the following cases selected from a large series:

CASE 1. C. A., struck on the head with a stone; unconscious when admitted to hospital. Injury to right parietal region. Blood pressure: Systolic, 160; diastolic, 85; pulse pressure, 75; pulse, 60. Trephined; subdural hemorrhage; recovery.

CASE 2. J. B., male, aged 75 years, fell down stairs and sustained right parietal head injury. Blood pressure: Systolic, 150; diastolic, 60; pulse pressure, 90; pulse, 65. Trephined; subdural hemorrhage. Patient died.

CASE 3. J. McK., boy, struck on head with a stone; unconscious. Blood pressure: Systolic, 110; disatolic, 60; pulse pressure, 50; pulse, 58. After operation: Systolic, 90; diastolic, 60; pulse pressure, 30; pulse, 72. Recovery.

CASE 4. Patient struck on head with flask. Unconscious on admission. Right parietal region crushed in. Blood pressure: Systolic, 198; diastolic, 63; pulse pressure, 135; pulse, 65. Patient died.

CASE 5. P. R., fell from an automobile and struck head on paved street; semicomatose. Blood pressure: Systolic, 122; diastolic, 58; pulse pressure, 64; pulse, 58. Trephined; external hemorrhage; recovery.

CASE 6. D. L., fell from street car, alighting on head; semiconscious. Blood pressure: Systolic, 122; diastolic, 68; pulse pressure, 54; pulse 60. In twenty-four hours pulse was 56; blood pressure: systolic, 120; diastolic, 80; pulse pressure, 40. Did not trephine; patient recovered.

CASE 7. M. S., fell down stairs while drunk and was admitted to

hospital in unconscious condition. Fracture over parietal region. Blood pressure: Systolic, 140; diastolic, 70; pulse pressure, 70; pulse, 70. Did not operate. Patient died in three hours.

CASE 8. L. P., received gunshot wound in left temple. Blood pressure: Systolic, 220; diastolic, 20; pulse pressure, 200; pulse, 60. Did not trephine. Patient died in two hours.

CASE 9. J. G., fell from beam on ship, alighting on head. Unconscious when admitted. Blood pressure: Systolic, 150; diastolic, 65; pulse pressure, 85; pulse, 44. Patient trephined; depressed fracture over left temporal region, with subdural hemorrhage. Patient died.

CASE 10. R. F., fell from automobile and was dazed when admitted to hospital. No external signs of injury. Blood pressure: Systolic, 122; diastolic, 58; pulse pressure, 64; pulse, 51. Patient trephined; fracture of right temporal bone and great amount of extradural hemorrhage. Patient recovered. Blood pressure after operation: Systolic, 120; diastolic, 75; pulse pressure, 45; pulse, 68.

From a study of these cases it appears that there is a relationship between the pulse rate and pulse pressure in any given case, and as the pulse rate descends, the pulse pressure ascends until finally the pulse pressure becomes greater than the pulse rate; when this has occurred, compression is always present, although one should never wait for this phenomenon where a proportionately high pulse pressure is rising and the pulse rate falling.

In severe fractures of the base with widespread hemorrhage, the blood pressure symptoms are valueless.

In traumatic cerebral compression where the local symptoms suggest a blood clot or a depressed fracture pressing on the brain as evidenced by Roentgen ray, palpation or paralysis, the general symptoms, such as slowed pulse and blood pressure findings, may be of little value, if the medulla is not involved by pressure. Operation is the only rational treatment in these cases.

In cases with major symptoms of choked disk, headache, disturbed sensorium, coma, increased pressure of the cerebrospinal fluid as registered by the spinal mercurial manometer, and slow pulse, we will invariably find a high pulse pressure.

The systolic pressure is too uncertain a factor to be of any value whatever in diagnosing the amount of pressure.

Our decision as to whether a patient should be trephined should be determined after grave reflection and consideration of the entire group of symptoms, but in all cases of head injury frequent estimations of the pulse pressure and pulse rate should be made.

The subject has passed out of the realms of thought and presents itself as a clean-cut fact: the issue is unmistakable.

With an increasing pulse pressure and a falling pulse in traumatic cerebral compression, an operation should be performed without delay.

THE TREATMENT AND STUDY OF TWELVE NON-PARETIC NEUROSYPHILITICS TREATED BY INTRAVENTRICULAR INJECTIONS OF SALVARSANIZED SERUM.—A. L. Skoog and Karl A. Menninger, *Journal Nervous and Mental Disease*, Vol. 50, No. 2, August, 1919, makes a detailed report of a clinical and laboratory study of twelve cases of non-paretic cerebral and cerebrospinal syphilis, of which both acute and chronic forms were

represented, all well advanced. Treatment consisted in repeated intraventricular injections of serum salvarsanized *in vivo*. The details of technique are also given, and are slightly at variance with those of certain other contemporary workers. The treatments continued over a period of some two months; observations were continued for a month thereafter, when they were interrupted by the war.

The following are the conspicuous deductions from the laboratory data:

1. A study of the blood serum Wassermanns on the cases treated shows that 0 cases were changed from positive to negative by one injection; 5 cases were changed from positive to negative by a course of injections; 4 cases, probably more, remained positive even after the course of injections; 1 case, originally negative, remained so after the course; 2 cases have incomplete data (death); in general the changes in blood serum Wassermann reactions agreed with those of the spinal fluids.

2. The gold sol reaction of the cerebral fluid was not uniformly modified by treatment. In some cases its intensity was diminished, in others augmented; while in others, its form was modified.

3. The Wassermann on the cerebral fluid was in five cases altered from positive to negative by the first treatment; and so remained. In one case, repeated treatments did not change it from positive; and in four cases in which it was negative, it so remained throughout the treatments. Two cases have incomplete data.

4. A globulin decrease was observed in the cerebral fluids of a few cases. As a rule, the globulin was very scant.

5. Practically all specimens of cerebral fluid were found to contain no cells; corresponding with the findings of other workers.

6. The gold sol reaction of the spinal fluid was markedly diminished by treatments in four cases; in two cases, it was left unchanged; and in three cases, a positive reaction was brought out in a case which had previously been found negative, one of them three different times.

7. The Wassermann on the spinal fluid was changed from positive to negative in four cases, remained unchanged positive in four known cases, and remained unchanged negative in one case. In no case was it altered from negative to positive treatment (cf. Gold reaction).

8. Aside from the reaction of transitory toxic meningitis, the globulin and cell counts in the spinal fluid remained essentially unchanged. In none of the cases selected was there a high cell count.

9. Striking differences between spinal and cerebral fluid exist in cases of neurosyphilis. Whatever the conditions in health may be, there is no doubt that under the abnormal conditions of a syphilitic infection of the central nervous system, there is an interference with the communication between the ventricles of the brain and the sub-pial spaces of the cord. Thus, in the cases allowing of comparison of the spinal and cerebral fluids, the Wassermann reaction was at variance in 6 cases, agreed in 6 cases. The globulin was dissimilar in 7 cases, similar in 5 cases. The cells were always dissimilar (12 cases). The gold reactions were dissimilar in 8 cases, similar in 4 cases. Of these variances the positive evidence in the case of the Wassermann was uniformly with the spinal fluid; in the case of the gold sol reaction, it was in three of the eight instances with the cerebral fluid, four times with the spinal fluid; and once the nature of the two curves was entirely at

variance. Some of these cases are of striking interest in the light of that information. For example, Case C; with a negative gold reaction on the spinal fluid and a practically negligible globulin content, the pathology was well certified to by the gold reaction of the cerebral fluid and its globulin content.

Following are the general conclusions:

1. Twelve cases of non-paretic neurosyphilis were treated intensively by the intracerebral injection of salvarsanized serum.

2. The *Technique* of the method of treatment used is described in detail. Serum salvarsanized *in vivo* was exclusively used. Local anesthesia is utilized for trephining; and the parietal area is selected.

3. The *Reactions* to treatment were as a rule not severe: but occasionally became alarming and even fatal. The symptoms consist usually in slight febrile reaction, more or less headache, and variously located pains sometimes accompanied by a toxic meningitis of short duration.

4. The twelve cases presented embrace 4 cases diagnosed vascular type of cerebral syphilis, 2 tabes dorsalis, 1 idiot, and 5 cases of unclassified neurosyphilis, 2 of which may be tabo-paresis.

5. The clinical results of treatment showed marked improvement in 2 cases, slight improvement in 6, none at all in 2, and fatality in 2 cases. The improvement showed no tendency to follow diagnostic classes.

6. The laboratory returns showed as a result of the treatments:

(*a*) Wassermann changed in—
blood serum in 50 per cent. cases.
spinal fluid in 50 per cent. cases.
cerebral fluid in 80 per cent. cases.

(*b*) Gold sol in reaction (spinal fluid).
diminished in 40 per cent.
intensified in 30 per cent.
(Irregular in cerebral fluids.)

(*c*) Globulin in cell counts of spinal fluid not markedly altered.

7. The laboratory data indicated marked improvement in 2 cases, slight improvement in 5; none at all in 3.

8. The clinical and laboratory data in point of response to treatment would appear similar numerically: but a study of individual cases shows that they agree precisely on only 20 per cent. of cases; and differ completely in 50 per cent., showing a tendency to be reciprocal.

9. It is apparent from the differences in the spinal and cerebral fluids that at least in certain pathological conditions, such as those presented, there is an interference in the communication channels between the ventricles and the fluid spaces of the spinal cord.

10. Two cases died: one probably as a direct result of the treatment; the other possibly as an indirect result.

11. On the whole, the brief but intensive treatment appears to have given encouraging results, which possibly would have been much more gratifying had it been longer continued. The improvements were moderate rather than extreme, but no cases were made worse save the two who succumbed, either from the laboratory or clinical standpoint. Two cases with rather remarkable improvements are included. One gratifying feature is the enthusiasm with which most of the patients co-operate in and appreciate the treatments. This is in one way a draw-

back, as they are apt to consider themselves so much improved that further treatment is unnecessary.

Early Neurosyphilis Asymtomatica with Report of Observations and Cases.—Joseph V. Klauder, *American Journal of Syphilis,* October, 1919, reviews neurosyphilis as it is manifested in its incipiency and presents case histories to illustrate the clinical development and progress of such cases, which, also, shows various laboratory aspects of early neuro-syphilis.

This study discloses that there is an involvement of the nervous system in a large group of cases in the early period of syphilis. In addition to this group there is another, without neurologic or spinal fluid abnormalities other than the presence of the treponema in the fluid. These observations together with our clinical and laboratory knowledge concerning the invasive powers of the treponema during the period of acute treponemiasis support the belief expressed, that at this time probably in all cases of syphilis, the nervous system is invaded by the parasite. The nervous system at the time of the invasion may or may not react to the organism.

The clinical phases of early neurosyphilis are presented. The early neuraxis involvement may be meningeal, vascular or parenchymatous. The meningeal type is the most frequent and is divided into four clinical groups. One of these groups—the asymptomatic, in which there are conspicuous spinal fluid changes indicative of a meningeal involvement is particularly pointed out.

Of the cranial nerves the eighth is the most frequently involved, then in order of frequency are the following: The second, seventh, third, fourth, fifth and sixth.

Observations are recorded in which positive spinal fluid changes were noted after arsphenamine therapy in previously untreated cases of secondary syphilis with negative spinal fluids. In one case there were only spinal fluid changes, in another, in addition, there was clinical evidence of neurosyphilis. In the latter instance this phenomenon is ordinarily known as neurorecidive. A brief review of the literature is made concerning the observations of others on this subject. Neurorecidive and the Herxheimer reaction are defined and a brief review of the literature is made. Observations are presented in substantiation of the view expressed that neurorecidive is an expression of a Herxheimer reaction. This phenomenon-neurorecidive is divided into two stages, the laboratory or asymptomatic; the clinical or symptomatic. The former is styled: "neurosyphilis provocativa asymptomatica," the latter, "neurosyphilis provocativa symptomatica."

The Herxheimer reaction is regarded prognostically of bad significance and its excitation should, therefore, be avoided in the treatment of syphilis.

The harmfulness of the insufficient and exclusive use of arsphenamine in the early treatment of syphilis is pointed out.

A New Sign of Nerve Regeneration.—Isador H. Coriat, *Boston Medical and Surgical Journal,* August 7, 1919, discusses the new and important sign discovered by Tinel, the so-called "signe de fourmillement," the appearance of formication or tingling produced by pressure.

This test when taken in conjunction with the return of electro-conductivity and selective sensory regeneration forms a triad of signs of regeneration of nerve, which is very important in order to determine whether spontaneous nerve repair is going on or whether sutures should be performed.

The test is accurately described in Tinel's "Nerve Wounds." When compression or percussion is lightly applied to the injured nerve trunk, we often find in the cutaneous region of the nerve a creeping sensation, usually compared by the patient to that caused by electricity. It appears about four to six weeks after the injury, and must be distinguished from pressure pain which occurs at the site of the injury, and not in the area of cutaneous distribution. As nerve regeneration progresses the sign is elicitated further down along the course of the nerve. If the point of pressure remains stationary for a length of time we are warranted in concluding that regeneration has stopped.

The test is very easily applied, but should be carefully done in each case, as the tingling produced by neuroma formation may lead to error. In neuroma formation or in the early stages of regeneration without neuroma formation, the formication is limited to the level of the lesion. In the neuroma formation also, where the regenerating axis-cylinders are blocked and may consequently lose themselves in the surrounding tissues, the formication remains fixed at the level of the lesion. In actual regeneration of the nerve the formication progresses over the zone of the growth of the axis-cylinders and can finally be detected along the partial or entire cutaneous distribution of the nerve. For a time it may involve the entire cutaneous distribution, but as regeneration becomes complete, it finally can be detected only in the extreme periphery.

The exact cause of this formication it is difficult to state, but since it can be produced by a far lighter pressure than formication in an uninjured nerve, it probably is due to an increased sensitiveness of the young axis-cylinders. It is best, however, not to rely upon the formication sign alone. The test should be carefully correlated with the other investigations of the nerve lesion, such as protopathic and epicritic sensibility, regenerating pain points, and electrical reactions.—*American Journal of Surgery.*

THE INCIDENCE OF SYPHILIS AS MANIFESTED BY ROUTINE WASSERMANN REACTIONS ON 2,925 HOSPITAL AND DISPENSARY MEDICAL CASES. —Day and McNitt, *American Journal of Syphilis,* October, 1919, report that two thousand and nine hundred twenty-five hospital and dispensary patients were subjected to a routine Wassermann test during the year 1918. From a detailed examination of the results obtained the following conclusions may be deducted: 1. The incidence of syphilis as shown by the Wassermann reaction was lowest among the well-to-do, about twice as high among the middle class of society, represented by the pay-ward patients, and about three times as high among the lower social class, or free-ward patients. The incidence of syphilis among colored patients was about six times that among private patients.

2. About 15 per cent. of cases giving strongly positive reactions gave no clinical evidence of syphilis. This percentage increases with the cholesterin positive cases, indicating that a certain number of cases giving weakly positive Wassermann reactions with the cholesterin antigen only did not have syphilis.

3. The percentage of clinically positive syphilis is highest in the strongly positive group (61 per cent.) and lowest in the +1 positive cholesterin cases (7.3 per cent.)

4. Weak reactions with the cholesterinized antigen are of value only when there is a definite clinical evidence of syphilis, in treated cases, or in cases of neurosyphilis.

5. Of 853 white males, 30 per cent. gave positive Wassermann reactions; of 924 white females, 16 per cent. were positive. Among colored patients 48 per cent. of 200 males and 40 per cent. of 273 females gave positive Wassermann reactions.

6. Among 7 cases of diabetes giving positive Wassermann reactions, only one did not give clinical evidence of syphilis.

7. Of four cases of malaria giving positive Wassermann reactions it seems probable that two of the positive reactions were due to malarial infection and not to syphilis.

A Case of Pseudohypertrophic Dystrophy.—Carl O. Kohlbry, *Journ. Mo. State Med. Assoc.*, reports the case of L. G., aged 8 years, who "stumbles when walks; has trouble getting up when lying down."

Family History.—Grandfather had large calves of legs but no weakness. One younger brother, aged one year, just starting to walk, was seen and has definitely enlarged calves though not nearly so marked as those of the patient's.

Previous History.—Late in talking, started at 2 years. Walked at 1 year, but stumbled.

Present Illness.—Started when patient first began to walk at 1 year. Often fell on walking, stumbled often. Can't squat down without losing balance. Can't climb stairs well. Strength of arms poor, can't carry two loaves of bread any distance. Has had large calves to legs since start of walking. Mentality considered normal.

Physical Examination.—Mentality average. Rather dull expression due probably to very large tonsils and adenoids. Thighs not particularly atrophied, calves of legs very large. Infraspinatus muscles large. Upper arm extensors probably slightly large. Posture erect, practically no tendency to lordosis. Walks fairly well, though tendency at times to walk on toes and turn toes in, high instep, probably due to some atrophy of peronei. When laid on back, rolls over on abdomen, draws legs up under him, then arms, straightens legs, then puts one arm and later the other on the knees and straightens out. The whole takes an appreciable interval of time. When hands are put in axillae and patient raised the shoulder muscles are weak and the girdle gives and tends to cause him to slip through the hands. Pectoral muscles are small, atrophied. Arms definitely weak, grips are weak. Muscles of calves feel firm and really look very strong. Blood sugar 0.13 per cent. (normal). Blood and urine normal.

EXPERIMENTAL NEUROLOGY.

On the Cytology of the Cerebro-Spinal Fluid in Mental Disease.—G. L. Brunton, *Jour. of Mental Science*, October, 1919, records his studies of the cerebro-spinal fluid in 100 cases of mental disease, in which he used Alzheimer's technique, which he describes in full, and

from which the following conclusions are formulated: Examination of the cerebro-spinal fluid is of great importance and a valuable aid in the diagnosis of mental disease.

Alzheimer's method is the best for the cytological examination of the cerebro-spinal fluid: cells can be differentiated in a way never hitherto possible, and a fair quantitative count can be made.

The cells of the greatest diagnostic importance are the plasma-cell, the phagocytic and endothelial cell, and the lymphocyte in excess.

A high cell-count with an excess of lymphocytes together with the presence of plasma-cells, is strong evidence of parasyphilitic lesion.

Rest in bed after lumbar pucture is desirable to avert the after-effects.

NEURO-DIAGNOSIS.

Differential Diagnosis in Nervous Syphilis.—W. A. Jones, *Journal-Lancet,* 1919, Vol. XXXIX, p. 342, writes that a physical examination usually shows some of the cardinal differential points. In syphilis the pupils are usually different in size and in form; and a pupil that is irregular, elliptical, or larger than its fellow, is very suggestive of a syphilitic origin. Someone has said that the left pupil is more apt to be larger than the right. When a fixed pupil exists, and the knee-jerks are unobtainable, or are obtained only with great difficulty and by re-inforcement, one must immediately consider the possibility of a developing tabes, a posterior spinal sclerosis. The usual methods of diagnosticating tabes will clear up any uncertainty that one may entertain. But, again, if this condition is associated with alcoholism, with its stupor and mental phases, due to a wet brain, further investigation may be needed to determine the relative value of the two disorders. One precaution may be sounded as to the value of the blood Wassermann and the spinal-fluid Wassermann. One must be prepared for an occasional uncertain diagnosis, for in both of these diseases (alcoholism and nervous syphilis) there is a tremor, usually of the extremities or of the tongue, and the safest method in differentiation is a spinal puncture with notation of the pressure of the spinal fluid, and the reaction obtained for syphilis, as well as a positive globulin and excess albumin. When the neurologic symptoms predominate, however, and there is a persistent tremor or a persistent special defect shown by the alteration of the reflexes, and particularly the defective reflex in the pupil, the probabilities are that syphilis is the fundamental cause of the disease.—*Amer. Jour. of Syphilis.*

NEURO-SURGERY.

Traumatic Head Surgery.—Charles W. Roberts, *Southern Medical Journal, September,* 1919, summarizes as follows:

1. Lacerations of the soft parts should not be looked upon as simple conditions. The frequency of brain abscess following such injuries does not justify this viewpoint.

2. All depressed fracture cases should be operated upon. Late

epilepsy, or interference with the highly organized cortical centers, demands this method of treatment.

3. The important factor in a head injury case is not the presence or absence of fracture of the vault or base. Patients most seriously injured commonly have no fracture at all, and, conversely, the simpler types of brain injuries are frequently associated with tremendous linear or depressed fractures. Often these apparently alarming fracture cases are saved by the very enormity or extent of the rent in the bone, permitting quick drainage of free blood and the fluids resulting from rapidly ensuing edema.

4. The study of a head injury patient, and the method of treatment required, hinges upon the question of intra-cranial pressure. The elevation of depressed bone, the removal of loose bone fragments, the checking of hemorrhages and the repair of soft parts are the simple incidents connected with a given case. A gradually increasing intracranial pressure, as evidenced by a rising pulse pressure but more accurately by frequent resort to the ophthalmoscope and the spinal mercurial manometer, should be convincing proof that a cranial decompression and drainage should be performed.

5. The decompressive effect of a craniectomy is dependent upon the area of bone removed and fails to be of value unless the dura is widely opened and left open. The old-fashioned trephine should be discarded and remembered only as of historical interest.

6. The diagnosis of "concussion of the brain" should be held in reserve for that class of cases suffering only temporary symptoms. The lack of a proper understanding of the significance of this term negatives scientific investigation and the effective handling of many cases.—*American Jour. of Surgery.*

NEURO-THERAPY.

A Treatment of Meningococcic Infection.—W. W. Herrick, *Southern Medical Journal*, October, 1919, believes the study of meningococcic infection occurring in military camps has broadened our conception of the disease. The meningococcus is no longer considered an organism which invades the meninges alone, since it is found that it may be more widely dispersed throughout the body.

Meningococcic infection may be divided into three stages: The first, a local invasion of the nasopharynx, tonsils, or accessory nasal sinuses; the second, a dispersion throughout the blood stream or meningococcic sepsis; third, the stage of metastasis, usually in the meninges, not infrequently in the joints, lungs, pericardium, endocardium, eye, epididymis and skin. These three stages may coincide or the process may stop at any stage.

The treatment based upon this conception of the disease is modified somewhat from the conventional intraspinal therapy, which is applicable alone to the metastatic stage.

The treatment of the first stage is merely that of the carrier. Antiseptic sprays have not proved their value in practical work. Most cases are freed from the meningococcus within 10 days without teratment. Time, sunlight, fresh air are perhaps more efficacious than irritant anti-

septics. Ten per cent. of the nasopharyngeal hosts of the meningococcus will remain carriers for a number of weeks or months. In these cases cleansing sprays of normal saline solution followed by the local application of anti-meningococcic serum appear to be as useful as any other measure. Those who remain carriers for a number of months, or permanently, may require surgical treatment of tonsils, adenoids, accessory nasal sinuses or other similar foci, which harbor the offending organism.

The treatment of the second stage of the disease, the stage of sepsis, is by the intravenous injection of anti-meningococcic serum in amounts of about 100 c.cm. The average case requires three such injections at intervals of from 12 to 24 hours. The serious type of meningococcus sepsis demands such serum administration as often as every 8 hours. The reaction following these injections is not more severe than that following the intravenous serum therapy of pneumonia, due to the pneumococcus, type I, and should be carried out with the same precautions in the matter of determining sensitization. The serum should be administered very slowly at first, at a rate not to exceed 1 c.c. per minute for the first fifteen minutes, ceasing if signs of anaphylaxis occur. The injection should be preceded by morphine, grs. ¼ and atropine, grs. 1/100, in an adult. If meningitis is present, from 40 to 60 c.cm. of cerebrospinal fluid should be drawn one hour after the intravenous injection of serum and about 30 c.cm. of serum administered into the subdural space. These intraspinal treatments should be repeated once every 24 hours, until the meningococcus disappears, the lymphocytes return and the number of cells greatly diminishes. The average case will require about four intraspinal treatments.

The treatment of hydrocephalic meningitis, or subarachnoid block, should be very prompt. Ventricular puncture is usually necessary, although Cobb's method of manipulation of the head on the neck with a lumbar puncture needle in place, or cistern puncture are sometimes useful.

The study of 340 cases has shown that this outlined method of treatment greatly reduces the mortality and the number of complications and is particularly efficacious in the more serious types of the disease. The milder types of the disease may be treated by intraspinal methods alone and do not require an intensive intravenous treatment.

Of primary importance is the selection of an appropriate serum, one that contains antibodies for the type of meningococcus affecting the patient. The clinical effect and the agglutinins content are the most reliable measures of specificity.

The present obstacle to a satisfactory treatment of meningococcic infection with large amounts of serum is the high cost of the serum. The retail price of anti-meningococcic serum is $6.00 for 30 c.cm., although the cost of production of serum is between one to five cents per c.cm.

THE INTENSIVE TREATMENT OF MENINGOCOCCIC MENINGITIS.—Donald J. Frick, *California State Journal of Medicine*, October, 1919, reports the technique and results of treatment in a series of twenty cases treated at Camp Beauregard.

Since meningococcic meningitis is a blood stream infection it is necessary to use serum intravenously continuously and intensively.

The serum must be brought in direct contact with the meningococcus, and since the author does not believe the choroid plexus is pervious to serum, he gives serum intraspinally early and in sufficient amounts to control and destroy all bacteria in the cerebrospinal fluid.

Following is the outline of treatment:

Suspicious cases of meningitis are immediately punctured, if the spinal fluid is cloudy or the symptoms seem definite, 30 to 60 c.c. of anti-meningococcus serum is given.

One c.c. of serum is injected under the skin at the same time for the purpose of desensitization.

One and one-half to two hours later, if the meningococcus is found in the spinal fluid, 100 c.c. of serum is given intravenously. The first 15 c.c. given at the rate of 1 c.c. per minute. A certain percentage of cases can only take a portion of this dose on account of serum shock.

The intraspinal injections are repeated every eight hours for six doses. After this the interval to be decided upon according to the condition of the patient. Intravenous injections of 100 c.c. to be given every twelve hours for three or four doses, every 24 hours for two doses if the case still has fever, and one or two doses at 48 and 72-hour intervals if thought necessary.

A brief analysis of the cases shows that ten were unconscious, three were stuporous and semi-conscious, seven were conscious, upon admissions.

The mode of onset in 18 was obtainable. Nine had chills; 16 had severe headaches, 7 of these headaches being frontal; 17 had severe backache; only one had photophobia; 5 had nausea and vomiting; 4 had cough, coryza and generalized aching.

The signs on admission were as follows: Three had contracted pupils; 4, dilated pupils; 13, normal pupils. In 10 cases, the pupils reacted to light; 5 no test made; 3 no reaction; 2 had had morphia before admission; 19 had rigidity of the neck; the other case developed it two hours after admission. Kernig's sign was present in all cases. Four cases had exaggerated reflexes. Babinski's sign in 6 cases. Retraction of head, 16 cases. Petechia was present in 13 cases, 7 times on feet and legs, 3 times on the shoulders, 3 times over the whole body.

Amount of fluid removed by spinal puncture ranged from 20 to 65 c.c. Nineteen of the fluids were cloudy, 1 was bloody. Pressure was increased in every case (capillary tubing was not obtainable, so no measurement of pressure could be made). Bacteria were found in 15 cases on first examination, in four cases on the second examination. Polymorphonuclear cells made up from 76 to 99 per cent. of cells present on the first examination.

Six cases had positive blood cultures; 12 cases had negative blood cultures; 2 cases had no report made on them on account of contamination.

Seventeen recovered cases—4 had 3 intravenous injections averaging 250 c.c. for each patient; 10 had 4 intravenous injections averaging 405 c.c. for each patient; 1 had 6 intravenous injections receiving 490 c.c.; 1 received 7 injections totaling 615 c.c.; 1 received 8 injections or 810 c.c. Average number of doses=4.3, average amount of serum=406 c.c. Three fatal cases: One received 7 doses totaling 685 c.c.; I received 4 doses totaling 400 c.c.; 1 received 1 dose of 70 c.c.; Average number of doses 4, average amount of serum 385 c.c.

Intraspinal injections were given in all cases after drainage of the cerebro-spinal system.

Seventeen recovered cases received from 11 to 39 doses. The minimum amount of serum being 210 c.c.; the maximum 1,020 c.c. Average number of doses 19.8, average amount of serum 492 c.c.

Three fatal cases: 1 received 1 injection of 45 c.c.; 1 received 7 injections of 170 c.c.; 1 received 25 injections of 622 c.c. Average number of doses 11, average amount of serum 279 c.c. The minimum amount of serum given to a recovered patient was 435 c.c., the maximum amount 1635 c.c.

Seventeen cases recovered, three cases died—a mortality of 15 per cent.

Complications in recovered cases: one broncho-pneumonia, cured; one bilateral pyelitis, cured; one arthritis, serious effusion into knee joint, aspiration with injection of 10 c.c. of anti-meningococcus serum with recovery; one arthritis right elbow, recovery.

First case lived 48 hours after coming to hospital; second case, unconscious when found, lived five hours. No history was obtainable and length of time of symptoms before removal to hospital not known. Third case was in hospital 19 days, but was complicated by syphilis, as shown by a history of chancre 14 months before and a double plus Wassermann.

Seventeen recovered cases averaged 57 1/3 days in the hospital. One case was discharged at end of 31 days; 2 cases remained in hospital 90 days.

All cases before discharge were given setting-up exercises and made to do a five-mile hike without fatigue. This criterion was decided upon as it was found in the former epidemic that a great number of returned cases with a post-meningitic neurosis, all having about the same group of symptoms—pain in back, inability to march or drill, inability to bend forward, and immediate fatigue with any exertion. Twenty of these former cases had to be sent to a special hospital for reconstruction. This extra period of training necessarily prolonged the stay in hospital.

The author believes that all serious complications, protracted cases, ventricular blocking, and high mortality were probably due to too small doses of serum, given at too long intervals.

PSYCHIATRY.

Psychoses Associated with Influenza.—Karl A. Menninger, *Archives Neurol. and Psychiat.*, September, 1919, presents a statistical study of the subjects, from which the following conclusions are drawn:

1. Southard's eleven-group nosology is commended by its mechanical convenience and its neat inclusiveness, and serves admirably to present cases illustrative of findings as follows:

2. Active neurosyphilis (Southard's Group 1) may be precipitated by influenza (and cases of sluggish course accelerated).

3. Hypophrenia may be augmented in degree, and a case of the apparent process "Morosis+Influenza=Imbecility" is cited, but no evidence was obtained for the production of total loss of intellect, the acute dementia of the idiocy type, or Kraepelin's misnamed "infectious idiocy."

4. Epilepsy may be altered quantitatively and qualitatively, that

is, in the frequency and in the form of attacks, but there were no instances of its initiation by influenza.

5. Delirium tremens and other forms of alcoholic psychoses were quite frequently induced by the added toxemia of influenza, but probably in no greater frequency than would obtain in a similarly large number of any acute infectious disease.

6. Of the encephalopathic psychoses the occurrence of Leichtenstern's influenzal "hemorrhagic encephalitis" with a peculiar psychosis was demonstrated clinically and by necropsy.

7. Delirium remains the most polychromatic and versatile of mental disease pictures; its association with influenza is notoriously frequent, and its manifestations bewilderingly multiform. It stands as the type illustration of the paradigm, "*Unknown factor+influenza=psychosis.*"

8. Of psychoses associated with senility and the presenium, one rather equivocal case is presented as having been initiated by influenza without previous indications.

9. Schizophrenia, cyclothymic psychosis and psychoneurosis occur following influenza with and without predisposition or previous manifestations.

10. Undiagnosticated psychoses and psychopathias form rather too vague a group to be considered categorically, but a representative case is given in which influenza incited a psychotic episode in a (?) psychopath.

11. Influenza apparently acts on the brain in three ways; to create psychoses, to precipitate psychoses in predisposed subjects, and to augment or alter their form where already existent.

12. We cannot from the present data regard influenza as capable of *qualitative* psychic specificity.

13. The *quantitative* specificity of the influenza neurotoxin is confirmed by its remarkable potency and versatility; the large number and wide variety of psychic and encephalopathic lesions produced being one of the most striking neuropsychiatric features of the epidemic.

14. The question of predispositon is simultaneously answered, there being evidence to show that psychoses sometimes occur directly after influenza with no forerunning symptoms or signs, and sometimes occur then only after months or years of less pronounced manifestations.

Juvenile Paresis.—Edward Livingston Hunt, *Amer. Jour. of Syphilis*, January, 1920, asserts that juvenile paresis is a type quite distinct from all the others and stands apart. Since the appearance of the Wassermann test and the colloidal gold reaction, its appearance has been more frequent and reports of cases are yearly becoming more numerous. The greater frequency of these cases is due to the diagnostic aid which the colloidal gold reaction offers. It is the only positive and definite means of diagnosing this particular type, as the clinical picture is one which varies greatly, and since many of these cases of juvenile paresis occur in infants and young children who are backward, it is exceedingly difficult to differentiate them from those of backwardness, imbecility and cerebral atrophy.

A characteristic feature is the fact that the child may develop in a perfectly normal way for the first few years of life, giving no suspicion as to the future appearance of a paretic condition. If the disease develops later, or in the early teens, the mental drop is more apparent,

more acute, and more rapid. The younger children gradually deteriorate. At first the change in mentality, morale and physical condition is scarcely apparent, so gradual is the progress of the condition. The disease becomes fairly well developed before the parents or physicians are aware even of its presence. So many infantile conditions occur which simulate the symptoms of juvenile paresis, such as the convulsions of epileptics, the excitability and depression of neurotic children, the childishness and backwardness of the constitutional inferior, that the diagnosis is obscure.

The mental symptoms of juvenile paresis are defective memory, dementia, excessive childishness, alternating periods of exhilaration and depression, fears, anxieties and a tendency to fabricate. This fabrication is a symptom of impaired morality. These children not only lie but embellish and enlarge their stories.

The physical symptoms resemble those occurring in the adult form, such as tremors, exaggerated reflexes, and immobile and unequal pupils. Epileptiform convulsions are much more common in the juvenile forms, in which the convulsion marks the early stage, whereas in the adult type it marks the later. The convulsion is one of the principal points of confusion between idiopathic epilepsy and juvenile paresis. The almshouse, nurseries and epileptic colonies are today sheltering many juvenile paretics under the misnomer of epilepsy and defective teething.

The pathology and the histopathologic changes of the juvenile type are identical with those of the adult form.

The age of juvenile paresis is usually about ten or twelve. The course of the disease is shorter than in adults, four years being about the maximum time.

PSYCHOLOGY.

Modes of Induction of Hysterical Symptoms and the Management of the Various Kinds, with Reference to Suggestion in Normals, in Confused and in Mythomaniacs.—Tom A. Williams, *Medical Record*, January 8, 1920, describes three important types of pithiatism, which it is advantageous to differentiate, for, though the mechanism is fundamentally one of suggestion in each case, yet the management of cases must differ according to the contingent circumstances. These three types are: *PRODUCTION BY SUGGESTION* either direct or indirect, though indirect suggestion is exceptional. Spoken suggestion and suggestion by imitation are quite common. The management of the symptoms resulting from mediate or immediate suggestion are simple as a rule. The chief measures according to the cause are (1) direct suggestion by means of the spoken word with strong affirmations; (2) direct suggestion combined with persuasive explanation of the condition, in accordance with the patient's ability to understand; (3) indirect suggestion (a) in cases of locomotor difficulty, causing the patient to be trotted around the room with assistance until he becomes so fatigued that he falls into normal progression, (b) by medical measures such as electricity, (c) by imitation, (d) by the indirect suggestion of environment, (e) by privation of pleasures or privileges, (f) isolation, (g) discomforts of strict regime. (4) Rational persuasion with or without suggestion in the more intelligent patients. In some

cases combined with (5) special re-educational measures to overcome vicious attitudes or defective movements.

Post-Confusional Auto-Suggestion.—With this type the following points are important. After the first confusion begins to lessen and while inertia still reigns, there is marked suggestibility, due to lack of synthesis of impressions of the new with the old. This over-suggestibility varies with the metabolic conditions of the organism. It may be aggravated by any toxic condition or by further traumatism, also by reprocussion of a strong impression. This occurs also with normal individuals as is shown when people are embarrassed or dominated by impressive surroundings or prestige.

Hyper-suggestibility due to toxic obnubilations should never be dealt with psychotherapeutically, as the patient is harmed by demands upon him of which he is incapable, and he perpetuates in imagination the discomfort he feels. No attempt at the re-education of these patients should be attempted, and psychotherapy should be confined to the simplest assurances, conveyed by gestures and manner, which are more fundamental than speech.

The mechanism differs in psychic shock, which does not produce actual but only seeming inertia, by deviating the energy from the mental synthesis needed—for the situation to be adapted toward the preoccupying thought to which mental energy may be given. The extreme of this is seen in paranoia, where it may lead to almost complete absorption.

In post-confusional inertia, however, there is no mono-ideaism in the usual sense, the patient has not the psychic activity necessary for synthesis, and so is ordinarily not dominated by a single impression, either from without or from his rudimentary mental life, which assumes a dream-like character known as onirism. The patient appears like one in a trance, and his thoughts have the incoherence of dreams.

This state is commonly caused by cerebral intoxication, especially in febrile disease, but may be caused by trauma, and is typical of cerebral commotion. The reprocussion of a powerful emotion such as fright, fear or social embarrassment, increases the patient's inability to make complicated associations, and adds greatly to suggestibility by causing temporary confusion.

The Mythomanic.—The characteristic conditions of the third type are: (1) extreme suggestibility to immediate surroundings, (2) lack of continuity of purpose, (3) the incapacity for accurate statement to the degree of pathologic lying, (4) often an exuberance of fancy and inventiveness, (5) lack of stability of character shown in erratic behaviour, and (6) often immorality especially in regard to honesty and fidelity. These qualities date from early childhood, are deep-rooted in the character, and not amenable to psychotherapy except after long treatment under the best conditions. Even so results are doubtful.

In civil life the common motive in the induction of the mythomanic syndrome is vanity; in war, it is more often self-preservation. From such patients arise the malingerers and simulators.

Mythomania is, according to E. Dupre's definition, the pathological tendency, more or less conscious or voluntary, towards falsehood and fabrication. The states due to it are more or less intimately related to hysteria, but must not be confused with it nor with dementia. Generally speaking, mythomania results from the lack of control, which in

normal persons is constituted by intellectual criticism, moral sense, and voluntary inhibition. It is generally associated with such psychic defects as vanity, malignancy and perversity actuated by vicious appetites and instincts.

Mythomania is more or less common in children. Simulation is unusual, but fabulation, the invention of romantic and dramatic situation and adventures is to be expected. It is not pathological, unless the excess of duration and intensity gives it an abnormal character, in which case it is a sign of psychic disequilibrium. It sometimes results in criminal auto- or even hetero-accusations, usually suggested by bits of morbid conversation.

Perverse mythomania is much more serious in adults, because of their greater intellectual development, and more complex social relationships. It may be classed under two heads: (1) Mythomania from vanity, where the person desires to attract attention of any sort at any cost; (2) Malignant mythomania, ranging from mere hoaxing to dangerous forms of slander and accusations; (3) Perverse mythomania, which is actuated by vicious motives, and is the most complex form. Many criminal adventurers belong to this category.

Both hysteria and mythomania are constituted by simulation, either provoked or spontaneous, of a fact non-existent of itself. They have many manifestations in common. The differentiation is that in hysteria they are unconscious and involuntary, and in the case of simulation they are conscious and partly voluntary. In both cases autosuggestion exists.

The study of mythomania is of much practical interest to the medical jurist, because of the problem it presents in many legal cases. All magistrates should be well informed as to its usual manifestations, in order to protect innocent persons from conviction on account of the unreliable testimony of children, and the malicious accusations of adult mythomaniacs.

Suggestibility and Its Relation to the Psychology of Hysteria.—R. G. Gordon, *Seale Hayne Neurological Studies*, August, 1919, adopts as the definition of hysteria: "a condition in which symptoms are present which are produced by suggestion and curable by psychotherapy," and defines suggestibility as "a readiness to accept propositions with a conviction which is not justified by logic and reason."

Formerly suggestibility was regarded as something abnormal, but it is now recognized that every individual is possessed of this to a greater or less extent. It is in fact an innate tendency of mankind, every individual being born with a tendency to accept suggestion. Like all other innate tendencies in man, it is greatly modified during the mental growth of the individual and in the process of the formation of his character. It is obvious that the man with a marked degree of the opposite tendency, that of self-assertion, will not be readily suggestible. There is, then, in each child a certain degree of the innate tendency to suggestibility, which is modified by the relative preponderance of the instincts of self-abasement and self-assertion. Compared with adults children are markedly suggestible. The young child is dependent on others for his physical requirements, such as protection and nutrition. This demands that the instinct of self-assertion should be in abeyance and that of self-abasement in the ascendency, but as his phys-

ical powers grow the child finds that he can do things himself and his self-reliance increases. Such self-reliance is a complex sentiment, but its basal factor is the instinct of self-assertion. As suggestibility consists in "readiness to accept propositions with a conviction which is not justified by logic or reason," it follows that the stronger the reasoning powers and the more readily they can be brought to bear on a new situation the less will be the suggestibility of an individual. But in order to reason about a subject one must have knowledge about it, and the knowledge must be well organized and well arranged in the mind if one is to apply it to the new situation.

The young child has no knowledge and is therefore unable to resist suggestion, but with increasing knowledge he is more and more able to throw the cold light of reason on the suggested material. The better arranged and organized his knowledge is the more rapidly can the searchlight be turned on and the less suggestible will he become. As a result of this organization of knowledge systems of ideas are built up, perhaps themselves originating from suggestions in the past but buttressed in the present by all sorts of proofs which at least satisfy the subject himself. Such systems are termed convictions, such as a man's moral, religious and political convictions, which form strong points in his mental field and are specially immune from outside influence. The least suggestible man is "the wide-awake self-reliant individual of settled convictions, possessing a large store of systematically organized knowledge, which he habitually brings to bear in criticism of all statements made to him."

It is next necessary to consider certain factors which modify a man's suggestibility. Firstly, the subjective factors, inherent in man and constituting an individual disposition favourable to suggestion, are youth, inexperience, lack of knowledge of the topic in connection with which the suggestion is given, and general lack of organized knowledge and settled convictions. Secondly, subjective factors acting from without are, the low vitality induced by fatigue and sickness, the disturbance produced by the action of the emotions, and the influence of the herd. Thirdly, objective factors are conditions affecting the source from which the suggestion is given, conditions affecting the manner in which it is given, and conditions affecting the circumstances under which it is given. The second and third groups require further discussion.

The low vitality produced by fatigue and illness is a potent factor in increasing suggestion and falls within the experience of every one. The reason of this is that when our vitality is low we feel physically feeble and incapable of acting for ourselves, and so our self-reliance is diminished and our instinct of self-abasement gains ascendancy over our self-assertion.

A tendency to do exactly the opposite to what is suggested is sometimes met with in sick people and also in children. This is likely to be well developed in persons with a naturally strong tendency to self-assertion, and it originates either from a dislike for the person who is trying to suggest things to the patient or from an unwise method of instilling the suggestion. It is, for example, often seen in sick people when the attendant has been over-gushing in trying to make the patient do something for which he is not inclined. This exception does not interfere with the general rule that low vitality tends to increase suggestibility.

In states of extreme emotional disturbance suggestibility is increased and the more intense the emotional feeling the greater is the suggestibility. Hence a man who is in a situation where a powerful emotion, such as fear or anger, is aroused, but where the normal activities of flight or attack are prevented, tends to be very highly suggestible. The reason for this is that an intense emotion dominates the whole consciousness, crowding out principles, reason, logic and all higher thought activities, so that a suggestion coming from the outside finds no resistance and its activities and has a clear field to work upon. If a suggestion can be brought to bear on the liminal or subliminal fields of consciousness without due intervention of the active consciousness, it will be much more potent, because no reason is brought to bear upon it. This is most obvious in the potency of suggestions given to a patient under hypnosis, when the appeal is entirely to the subliminal consciousness.

The influence of the herd has a great power of increasing the suggestibility of the individual. Man is a gregarious animal, and in all the ideas and actions is influenced by the dictates of his herd. People hold convictions and regulate their behaviour not by the light of reason, but because their "set" think and act like that, and to think or act differently is "not the thing." The factor underlying this suggestibility is the feeling of self-abasement in the individual, in fact of the composite force of the whole community, and the fact that he is frequently forced to accept situations in which his individual reasoning powers are not allowed to act. This suggestibility is well seen in the behaviour of crowds, more particularly when the suggestibility is increased by the presence of intense emotions.

This factor of herd influence on suggestibility has undoubtedly played a great part during the war, especially in the rank and file. The whole training of a soldier is concerned in teaching him to behave as one of a crowd. What his platoon does he does; the individual is of no importance; the composite body is all-important. He is taught to obey orders without question; his critical faculties must be in abeyance and he must abase himself before the authority of his superiors. All this naturally increases his suggestibility and no doubt may have been largely responsible for the ease with which the soldier has accepted suggestions during the war, which have led to hysterical symptoms the widespread incidence of which is even now scarcely realized.

Hysterical symptoms are produced by two factors. The first is the psychical factor which increases the subject's suggestibility, and the second is the physical factor which is perpetuated as an hysterical symptom, since the hysterical symptom is always due to the perpetuation of a physical disturbance present at the time when the suggestibility was increased. Hysterical symptoms may be produced as a result of six sets of circumstances, and in each of these it is necessary to define the psychical influence, which increases the suggestibility and the physical influence which determines the nature of the symptom. Probably in all cases both factors operate to a certain extent, but their relative preponderance varies enormously, for in some cases the psychical factor, by markedly increasing the suggestibility of the patient, allows a relatively slight physical suggestion to be perpetuated as an hysterical symptom, while in other cases the physical suggestion is so strong that the symptom will be impressed on a person of relatively low suggesti-

bility. It is convenient to arrange the groups of hysterical symptoms in such an order as will represent descending grades of psychical suggestibility.

The first group, which is comparatively rare in war, is found in those people who have acquired a sense of inferiority either in respect of their whole body or of one or more limbs or organs. In such patients, who are almost hypochondriacal in their expectation of illness, the slightest physical accident or passing ache or pain is sufficient to determine an hysterical symptom either affecting the whole body or the particular limb or organ which is believed to be weak. The treatment has not been completed when the hysterical symptom has been removed, for the suggestibility is pathological and the mental derangement which has determined this must be put right. Here the suggestibility depends on the abnormal preponderance of the tendency to self-abasement, which makes these patients consider themselves inferior to other people, at any rate in physical health. Their psychology is often found to be extremely complex, for the two instincts of self-abasement and self-assertion are by no means mutually exclusive, and one may find the patient displaying the extreme self-abasement in one direction but considerable self-assertion in another. Another factor which increases the suggestibility in these patients is that their mental derangement prevents them using their reasoning and critical powers to full advantage, hence they are unable to examine the value of the physical cause of their hysterical symptoms. Further, as their condition progresses they get really ill and their vitality is lowered, and so they become more suggestible, while the emotion of self-pity which is aroused works still farther in the same direction. In such cases the hysterical symptom may be of any variety, as the slightest physical stimulus will be responded to.

In the second group, the hysterical symptoms are sequels of commotion. Here some actual physical trauma such as an explosion has, without necessarily causing complete loss of consciousness, led to general confusion of the patient's mind. This may lead to a very temporary inability to hear or to see or to remember. Under such circumstances the patient's suggestibility is increased by the complete abolition of the power of reasoning and criticizing. His active consciousness is temporarily in abeyance and impressions are made only on his subconscious mind, which is always more amenable to suggestion. Under such circumstances the fact that he cannot hear, see, or remember suggests to him that he must be deaf, blind, or have lost his memory. Having received this suggestion he ceases to listen, to look, or to try to remember, so that until he is treated he is hysterically deaf, blind, or amnesic. These three hysterical symptoms have been quoted because they are the most characteristic of this group, but paralysis, dumbness, and other hysterical manifestations may result under the same circumstances.

The third group consists of symptoms produced under stress of great emotion. In such cases, as the natural outlet of the emotion is blocked, the intensity of the emotional feeling increases, and with this the extent of the physical expressions of emotion, which are useful in their incipient stages, but which become useless if they are intensified by the absorption of all the energy which ought to be used in the performance of the normal active sequel of the emotion. Such are dumbness and stammering, rigidity, tremor and collapse of the legs, and excessive purposeless

movements; these physical phenomena are perpetuated as hysterical mutism, stammering, tremor, and paraplegia, and in the case of the purposeless movements as hysterical tics or fits. The increased suggestibility is determined by the complete dominance of the active consciousness by the emotion and the consequent loss of reasoning powers. In the case of fear, under the stress of which hysterical symptoms are specially prone to develop, there is definite self-abasement in the presence of some overwhelming situation. In the case of panics or mob anger the suggestibility may also be increased by the influence of the herd, as was discussed above, but this would be in a general rather than in a particular way.

The fourth group consists of symptoms produced by hetero-suggestion. These are generally the result of some unwise remark or action on the part of the physician or nurse, which conveys to the patient the suggestion that he has some physical disability. Several psychical factors come into play. Firstly, there is the self-abasement which the patient feels in the presence of the physician, especially in respect of his knowledge of the subject, and his own lack of organized knowledge will itself prevent proper criticism of the suggestion. Then there are objective factors in the prestige of the physician, the manner in which he makes the remark, and the circumstances under which it is made. For example, if a distinguished physician remarks in the presence of an assembly of other physicians, all apparently agreeing, that the patient may have a disease which will result in paralysis of both legs the suggestion may be accepted, and paraplegia will ultimately develop. Or again, if a physician very carefully and with considerable ceremony examines for anesthesia, asking if the patient feels this and this, the patient thinks he is expected to have anesthesia and will readily develop it.

The fifth group comprises those symptoms acquired by imitation from another patient. The physical stimulus is here more defined, and symptoms such as stammering, abnormal movements, and various gaits seen in other patients are acquired. The psychical stimulus in this case is due to self-abasement felt by the imitator in face of another person, whom he regards as very wonderful or very extraordinary, and a certain interference with the critical powers induced by the emotion of curiosity and the influence of the herd. Here, however, the psychical element is of much less importance, for the tendency to imitate is strong in us all and it does not require much suggestibility to determine the perpetuation of the imitated symptoms which quickly becomes a habit.

The sixth group comprises symptoms which are habit continuations of definite but temporary organic disabilities which may range from blindness and deafness, through vomiting and urinary troubles, to paralysis, contractures and anesthesias. Here the physical stimulus is enormously strong, for it actually is present in the patient's own body. The psychical factor of increased suggestibility is probably present to a slight degree and may be induced by low vitality owing to the illness, but is of such little importance as to be almost negligible.

Simulation (Malingering)—Not an Adequate Diagnosis.—William A. White, *Journal of Nervous and Mental Diseases*, Vol. 50, No. 3, September, 1919, draws a distinction between simulation as usually understood by the laity and lawyers, viz., symptoms assumed on the

part of the individual as a means of escaping the consequences of his acts; and as viewed by experienced psychiatrists, criminologists and students of human behavior who view simulation as a relatively unusual phenomenon and see in the simulator an individual of bad personality make-up and in the symptom an expression of such defect.

The mere fact that a symptom is beneficial to a patient or is calculated to bring about, through its influence direct or indirect, some benefit to the patient is no argument whatever that it is assumed, for that might properly be claimed for every symptom.

Deterministic psychology discloses that symptoms arise in the psychical sphere because they are calculated to bring some benefit to the individual. The whole play of psychological mechanisms is properly viewed from this standpoint; man's activity as directed by his psyche invariably has his benefits as ends. The hysteric who becomes a languishing and interesting invalid for the purpose of getting an enormous amount of attention and being the center of interest and also of authority in the household, is familiar to us all. The neurotic who develops a paralysis and anesthesia of a hand or an arm, or perhaps a leg, as a self-inflicted punishment for conduct in the past which he unconsciously conceives of as having been sinful, is more subtle, while such types as the deeply introverted individual, who, to escape from all the adult responsibilities regresses to an infantile personality, or the paretic, who develops grandiose delusions as compensations for profound organic defects, are not uncommon—the last, one of the best known symptoms in psychiatry. All of these symptoms are plainly calculated to advantage the individual and yet none of them are presumed to be simulated.

Such symptoms are motivated in the unconscious and as such they cannot be laid at the door of the individual exhibiting them as products of his psyche for which he, in the ordinary acceptance of the term, may be held responsible. It is only when a symptom can be demonstrated to have had its inception in the field of the clear conscious awareness of the individual who at the same time had the conscious purpose in mind to deceive, to avoid responsibility or escape punishment, or bring about some other individually desired and consciously appreciated end by means of deception—that the term simulation is applicable.

Simulation (malingering) in this restricted meaning demands that the individual should be fully conscious of his purposes and the means by which he is trying to bring them about. This is the sense in which the term in its practical application is undoubtedly ordinarily intended to be used and yet those who use it probably do not have such a clear differentiation in their own minds, a differentiation which has only been made possible by the introduction into psychology of the concept of the unconscious.

Individuals whose mental make-up are defective respond to the ordinary stresses of life not infrequently by the development of psychoses. These are defective, inadequate, inefficient types of reaction because they do not enable the person to deal with the reality situations in efficient and constructive ways. Simulation is an inadequate, inefficient way of dealing with reality. The person who resorts to lying, to drinking whiskey, or to hysterical palsies in his efforts to get along with the everyday problems of reality which confront him, presents a defective type of personality, and no diagnosis of that individual is adequate which picks out alone the obvious, emphasized superficial, and

prominent symptom of that defect and makes a diagnosis upon it alone. The attempt at simulation is in itself a type of reaction which is an indication of a defective personality.

The diagnosis of simulation, therefore, cannot be made upon the utility of the symptoms, nor upon the motive back of the symbol, since the motive may be psychotic and indicative of a defective type of personality, which must be considered both as to diagnosis and possible punishment.

THE EDUCATIONAL TREATMENT OF DEFECTIVES.—Alice M. Nash and S. D. Porteus, *Vineland Training School Bulletin*, November, 1919, discuss Vineland's educational experience with defectives, which may be thus summarized:

In a great many cases the special class fails either because it is not fitting the defective for any occupation or because he does not follow in after life the occupation for which he has been trained.

Children vary just as much in their capacities for manual training as they do in scholastic abilities.

There are indirect advantages of special class work with defectives, the main one being that the regular grades may do better when the feeble-minded are eliminated.

An important point is the right selection of children for training in the various departments. For scholastic training the Binet tests give the best basis of classification. For industrial abilities the Porteus tests give the best indications.

Children two years or less mentally (average Binet-Porteus age) are excluded from kindergarten because they are found to make no permanent gain.

Children of seven years and less, Binet age, make no use of reading, whether for pleasure or profit. Children with I. Q.'s below 50 should not be given any instruction in ordinary school subjects at all.

Defectives mentally less than 9 years per Binet, unless displaying special aptitude, should be given only the most elementary number work. Operations involving the use of pen and paper are utterly useless for such defectives. They either do not use or do not understand such operations.

Needlework is one of the most practical occupations for defectives because it suits the middle as well as the higher grades, the equipment is cheap, there is ample demand for workers, and eventually contributes, if not to self-support, at least to self-help. The best work is not always done by those grading highest per Binet.

Woodwork is one of the most attractive of occupations for defectives, but its value is seriously limited by the fact that the trades which it leads to are too highly skilled for the defective to achieve competency in them. A few with special aptitudes may find scope here, but, for the majority, it must remain hobby work.

Domestic training has great value because it has range enough for all kinds of defective ability and it presents to the higher grades a means of livelihood. Within an institution it is essential to have well-trained workers.

Basketry is one of the poorest means of training, because it is slow and unprofitable, and has no future as regards the child. It is much in favor because children's work may provide an attractive exhibit and

it is, to certain children, a pleasurable occupation. The defective who can and does earn his living hereby is very rare.

School gardening on a practical scale is not possible in the city school systems where most of the special classes are. It is fine work for children, but suffers from the fact that farm labor to which it leads is very often drudgery from which the high-grade defective quickly escapes to take up easier and better-paid work as a factory hand.

PSYCHO-THERAPY.

General Paralysis Treated by Intraventricular Injection of Arsphenamine.—Irving J. Sands, *Archives of Neurology and Psychiatry,* 1919, Vol. II, p. 41, reports the case of a man, aged 40, married, who had one living child, a negative family history, but an alcoholic personal history, who had no knowledge of any venereal disease, began to show lapses of memory in December, 1915, which increased in severity so that he was obliged to discontinue his work as a carpenter in the middle of 1916; he then became irritable, showed speech defect and became ataxic; in March, 1917, he received one intraventricular injection of arsphenamine through a trephined opening in the skull. He was admitted to the Manhattan State Hospital in May, 1917, when he showed disorientation, poor memory, expressed grandiose ideas; showed marked speech defect, pupils were unequal and reacted very sluggishly to light, and the spinal fluid showed positive globulin, 54 cells, and a positive Wassermann reaction. He soon began to soil himself, became very euphoric and died following a convulsion. The post-mortem examination showed the characteristic lesions of general paralysis in the brain; namely, a thickened pia showing a characteristic milky exudate in the anterior poles of the cortex, lymphoid and plasma cells infiltration into the pia, neuroglia increases, cortical disorganization and perivascular exudation of lymphoid and plasma cells, many mast cells and a few rod cells, granulations on the floor of the ventricles, syphilitic aortitis and bilateral bronchopneumonia and pulmonary edema; the lesions in the left side of the brain which received the arsphenamine were more intense than those in the right side.—*Amer. Jour. of Syphilis.*

BOOK REVIEWS.

DISEASES OF THE NERVOUS SYSTEM. A TEXT-BOOK OF NEUROLOGY AND PSYCHIATRY. By Smith Ely Jelliffe, M. D., Ph. D. Formerly Professor of Psychiatry, Fordham University, New York, and formerly Adjunct Professor of Diseases of the Mind and Nervous System, New York Post-Graduate Medical School and Hospital; and William A. White, M. D., Superintendent of St. Elizabeth's Hospital, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University; Professor of Nervous and Mental Diseases, George Washington University, and Lecturer on Psychiatry, U. S. Army and U. S. Navy Medical Schools. Third Edition, revised, rewritten and enlarged. Illustrated with 470 engravings and 12 plates. Lea and Febiger, Publishers, Philadelphia and New York.

The fact that this is the third edition is evidence that the work is growing in professional favor. This edition has been revised to the extent of being remodelled and largely rewritten to conform to the advancements in the domain of nervous and mental diseases and especially in the, as yet, uncertain fields of vegetative neurology and the endocrinopathies, which bid fair to yield a rich harvest to the progressive practitioner.

The chapters on sensorimotor neurology have been revised to accord with many new observations which the Great War has afforded.

Mental diseases are classified from a psychological or psychopathological rather than from a physiological or physical standpoint; the psychological factor being given prominence in their cause and development.

In reviewing the second edition in these pages, we took occasion to write, "this is a highly meritorious work," and two years' close acquaintance with it, has given us no cause to alter that opinion.—D. S. B.

OUR NERVOUS FRIENDS—ILLUSTRATING THE MASTERY OF NERVOUSNESS. By Robt. S. Carroll, M. D., Medical Director Highland Hospital, Asheville, North Carolina, Author of "The Mastery of Nervousness" and "The Soul in Suffering." The MacMillan Co., Publishers, New York.

A book written in semi-fiction form, each chapter portraying the life story of an individual—real or fancied—addicted to nervousness, in a manner to teach a practical lesson to the afflicted and indicate the way to self-mastery.

The work is well written with a sprinkling of humor, but contains so much of pathos and tragedy as to raise a question as to its effects upon a given psycho-neuropath, and to suggest the oft—to us—presented problem of "unadulterated" cod-liver oil, viz., "does the person who can tolerate it, need it"?

Let the author's large experience with psycho-neurotics be the answer.—D. S. B.

FOOD FOR THE SICK AND WELL, HOW TO SELECT IT AND HOW TO COOK IT. By Margaret P. Thompson, Registered Nurse. Cloth, lx+82 pages. Price, $1.00. Yonkers-on-Hudson, New York: World Book Company.

This little book is based upon many years of practical experience in arranging and adapting a well regulated diet for the sick and convalescent, as well as for those who are well and wish to maintain their health; besides, it discusses the relation of food to health and the necessity for a balanced menu.

In addition, the work contains instruction for baths, hot sponges, salt rubs, enemas, douches, preparation and use of mustard plasters and poultices and directions for properly filling hot water bottles.

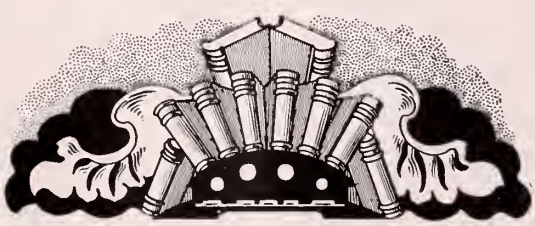
The index is especially arranged for ready reference.

The physician, nurse and housewife will find this volume of practical value.—D. S. B.

PRACTICAL ORGANOTHERAPY.—THE INTERNAL SECRETIONS IN GENERAL PRACTICE. By Henry R. Harrower, M. D., F. R. S. M. (Lond.). Published by The Harrower Laboratory, Glendale, California.

This manual on organotherapy furnishes a practical companion for those who have not the time or inclination to study the elaborate works on this important subject, and supplies a valuable remembrancer for those whose practice does not furnish sufficient experience to keep this complex subject fresh in the mind.—D. S. B.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS AND SURGEONS OF PHILADELPHIA FOR THE YEAR 1918.—A substantial volume creditable alike to editor and publisher, containing many valuable papers on various medical and surgical subjects, a few of which are neurological, and a number of special interest to the neurologist.—D. S. B.



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THE PHYSICAL FINDINGS IN DEMENTIA PRAECOX AND THE CALL FOR MASSIVE RESEARCH.

By

BAYARD HOLMES, M. D., Chicago, Illinois.

THE history of scientific progress has nowhere become a part of the medical curriculum. No understanding of the law can be attained without a knowledge of the development of the codes from Hammurabi to Napoleon. No legislator can ever attain distinction without a study of the evolution of the recognition of the principles of equity from Moses to Brandies. Unfortunately, medical education and training has been so completely an occupational affair that the broader aspects of medical evolution as a social function, have been left to theorists and idealists.

The essence of progress in scientific medicine rests upon a recognition of the universality of natural phenomena and the unity of the individual. Any reservation in regard to either of these axioms is fatal to rational investigation.

Many years ago, Joseph Cook made clear in his revolutionary lectures at Tremont Temple, Boston, that the common mind, as well in religion as in science, must recognize that "*for every effect there must be an adequate cause,*" and that there were no exceptions in natural phenomena. He was talking on miracles, to religious audiences prejudiced by traditional New England ecclesiasticism and dogma. He dodged entirely the question of the unity of the human individual.

It has always seemed to me that the greatest need, in order to secure a basis of agreement and co-operation in action among contending psychiatrists, is a recognition of the absolute integrity of the human individual. There is no possible separation of body and mind in psychiatric investigation and discussion, any more than there is among ophthalmologists a separation of vision from the individual who sees.

The physical condition and the mental symptoms of the dementia praecox patient change from day to day in the course of the disease, as does the physical and mental condition of a patient with typhoid or smallpox. One audit or one invoice of the physical and mental condi-

tions of a dementia praecox patient is not enough. In many of the early systematic natural histories, the same specie was described and pictured in two or more stages of its existence and given two or more names as two or more distinct genera or specie. The modern biologist is not exclusively interested in classification, and from protracted observation of one individual or of one stirp, he writes a life history of the species and gives a moving picture, as it were, of its physical condition. Just such a study of the physical and mental condition of the dementia praecox patient is necessary and desirable.

The biologist, in recording the life history of a species and its physical condition and conduct in various life periods and under diverse surroundings, follows two quite distinct methods. These two methods are supplementary and corrective of each other. In one, the life of the individual or of the selected stirp, is uninterruptedly observed; in the other, a large series of individuals, representing every stage of the specie's existence, is coincidentally studied for a short time. In the asylums for the insane the latter method is available; only in exceptional instances, however, can the former method be utilized in our State Hospitals.

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In the July, 1919, number of *Dementia Praecox Studies*, Renaudie presents a picture of the morphology of the dementia praecox patient, as recorded in the literature of the world, and in the *Archives of Neurology and Psychiatry*, for February of the same year, Southard gives a resumé of his own protracted morphologic investigations. The evidence of these articles is convincing to the unprejudiced reader, that there exists a cerebral, pathological morphology in the dementia praecox brain adequate in many cases to diagnose the disease at autopsy, as surely as paresis can be diagnosed by the Alzheimer findings.

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Just as biological students have long since abandoned the exclusively morphologic researches on animal life and vegetable species of the eighteenth and early nineteenth centuries, for biochemical and physiologic studies during life, so, as psychiatrists, we must abandon an exclusive morphologic pathology and utilize every method of observation leading to an interpretation of "mental disease." The morphologic lesions call loudly for a cause. Analogy suggests a blood-borne stimulating, irritating and, at last, destructive toxaemia,and suggests a full invoice of the physical and chemical condition of the living patient by means of every scientific approach, and through a comparison of every pathologic resemblance.

This is not a simple matter. It cannot be outlined in full in this brief paper. In the present deplorably inadequate state of our biochemical knowledge, a true perspective in our sketch cannot be promised, and ought not to be expected on the part of the reader. This much, however, can be positively asserted; the physical condition and the biochemical findings are adequate in early dementia praecox to demonstrate a toxaemia grave enough to produce the morphologic lesions found at autopsy.

It is not necessary to reassert that the origin, the character and the *modus operandi* of this toxaemia are still undemonstrated by the most exacting scientific methods. They are, however, so strongly suggested

by pathologic analogy and by clinical experience, that their value for therapeutic use and *for guidance to further research* is acknowledged by many conscientious students.

In previous papers we have pointed out the close resemblance of the toxaemia of dementia praecox to that of ergot poisoning, especially to that of epidemic ergotism. The evidence of this similarity is derived from the clinical histories of epidemic ergotism, from experimental intoxication of animals with ergot and its constituents, and from therapeutic ergotism in animals and in human beings. The earliest observers of epidemic ergotism in Europe described many cases of insanity, dementia and nervous disease among the victims of this strange visitation. The rye of two or more successive harvests rarely carried ergot productive of the malady. The amount of smut did not determine the malignancy of the epidemic or the character of the symptoms the patient manifested. In 1816 the last epidemic appeared in Western Europe, but the smut still occurs. During the far less malignant and greatly restricted and localized epidemics of ergotism during the last century in Russia, of many of which epidemics we have careful scientific histories, no less than 27 per cent. of victims of the disease have manifested mental disturbances, symptomatic of dementia praecox in almost every form and degree, and followed by permanent and irremediable habitude or dementia. Most of the victims manifesting mental symptoms were youths or young adults. Ergotism also affected the cord and gave rise to symptoms resembling posterior spinal sclerosis. This will at once arouse in the minds of the older neurologists memories of the early and typical anamneses of cases, now easily recognized as cases of locomotor ataxia, that followed epidemic ergotism. Ergotism seems capable of destroying neuroglia, cerebral or caudal.

The blood pressure in early dementia praecox is usually very low, and intermuscular injection of 0.5 c.c. of adrenalin does not raise this blood pressure, but causes it in most instances to fall. This reaction takes place in animals when they have previously been injected with repeated or large doses of ergot or those toxic amines which are found in ergot. If a few drops of adrenalin solution are held for a few minutes in the conjunctival sac on the dementia praecox patient, the pupil of the corresponding eye is dilated at the end of half an hour and remains dilated for an hour or more, sometimes for a few days. Occasionally, the pupil is already extremely dilated and then the pupil violently contracts, as measured by that of the opposite eye. These two adrenalin tests exactly correspond with reactions which animals exhibit that have been intoxicated with ergot.

Ergot is a variable mixture of secale bodies and other organic matter. It has a highly complex and uncertain physiological action corresponding with its complex and variable chemical make-up. Twelve toxic amines have been isolated from various specimens of ergot and the physiologic action of these simple bases have been separately studied. It is wholly uncertain whether any one of these bases, or any combination of them, are responsible for the mental symptoms of ergotism. They are capable of producing some of the symptoms of ergotism, as experiments on animals sufficiently attest, but the mental symptoms have never been aroused in animals by toxic amines or other ergot bases.

Unfortunately, these twelve toxic amines do not represent all the

toxic substance in crude ergot. There is reason to believe that they do not represent the most toxic portion of it. Our chemists have failed to successfully analyze the residue. The bases which have been recognized are perhaps the result of breaking up more complicated and more unstable structures that are toxic in a greater degree or in a different manner. Of the twelve toxic amines some raise and some lower the blood pressure; some cause contraction and some relaxation of the uterine muscle; some cause a contraction of the bronchial muscle and some relax it, and to add to the confusion, two amines which are both ocytocic may be antagonistic in some other particular. These contradictions, as well as the incomplete synthesis and study of the crude drug and its annual variability and potency, suggest the likelihood of much more complex amines containing molecules perhaps wholly unknown as yet to chemistry and resembling the equally unknown toxines and molecules resulting from bacterial growth. It is possible, if not exquisitely probable, that the pathogenic toxic substance which determines the stimulation, the irritation and the wreck of the neuroglia in epidemic ergotism, is wholly accidental to the growth of the smut or the condition of the rye.

Perhaps this lengthy reference to ergotism is not necessary to those who are familiar with its use and action, and with the studies presented in George Barger's book, "The Simpler Natural Bases," but many younger physicians will be grateful for the repetition. One can understand the interest which the toxic amines have aroused as possible factors in the production of dementia praecox, and especially the presumption in selecting histamine or betaimidazolylethylamin, the most toxic of them all, as the culpable factor. Unfortunately, the production of histamine intoxication has never yet produced any of the *morphologic lesions* of dementia praecox in animals under experiment. So far as meager experiments can be relied upon, histamine produces no destructive effect upon neuroglia, though ergot certainly does, *i. e.*, *some ergot on some animals*. Therefore, all our experimental work must be repeated with, and after, more exhaustive study of crude ergot.

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It is a matter of experience and history that clinical research and observation, undertaken on scant scientific demonstration, results in highly useful theories and therapeutic practices, which are tardily demonstrated by the laboratory method. In dementia praecox the urine furnishes evidence of abnormally large quantities of catabolized toxic amines. Some of these are easily recognized and some are recognized with difficulty. Methods of recognizing the catabolized products of simple, natural bases, and even of determining their quantities, are rapidly increasing in quantitative delicacy and in ease of application. We may, therefore, expect great progress in this matter. There is, however, danger of misinterpreting the routine tests that can be eliminated only by the use of every known and often many exacting quantitative methods. The fact is, however, so far unchallenged, that the urine of dementia praecox patients presents abnormally large quantities of the products of catabolized toxic amines.

It has often been noticed that the toxicity of a standard article or simple molecular product, is due to some accidental contamination. Methyl alcohol has a bad reputation in producing blindness, but there is every reason to believe that this specific toxicity is due to accidental

impurities incident to its manufacture, or to a combination between the methyl group and substances existing in the body of the affected patient. Of ten laboring men exposed to the fumes of methyl alcohol in cleaning a closed room, only two were made blind. Of a number of workmen accustomed to drink methyl alcohol for a number of months, only two lost sight, and these at the same time presumably from a new specimen of the alcohol.

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The sources of toxic amines or of combined toxines of unknown composition in the dementia praecox patient have been, and still are, in the minds of most reflecting psychiatrists, matters of conjecture or uncertainty. It is well recognized that histamine, which is the toxic amine most frequently and most generally incriminated or accused in this condition, is produced by the growth of a colon bacillus, known as the *B. aminophilus intestinalis*, in an artificial medium containing the amino acid histidin, incubated at an optimum temperature of 98.6° F. The rapidity of the growth and the quantity of histamin produced, depends upon the hydrogen ion concentration of the medium, and upon several other recognized conditions. It is a rather slow process in most experiments, and quantitatively quite uncertain. Numerous histidin catabolizing bacilli are found in the stools of healthy as well as of unhealthy persons, but there exists among these bacilli, wherever obtained, the greatest difference in the amount of histamin produced, even when growing on identical media under identical thermic conditions. The amount of this sort of work already reported, unfortunately remains inadequate and generally lacks completeness and exacting quantitative control, consistent only with massive production and research on a liberal and co-operative scale. Many must work together.

It is a fact that the amino acids, both free and in as yet unknown combinations, are indigenous to the mucosa of the intestinal tract. The earliest recognition of betaimidazolylethylamin in the human body was made by Dale in the mucosa of the colon, and there are many reasons to believe that such catabolized or combined and modified amino acids engorge the mucosa of the intestinal tract. In fact, it is an essential incident to alimentation. We are not then perfectly sure that the products of catabolized amino acids which we find in the urine of our dementia praecox or other patients in such enormous quantities (Ross), result from toxic amines produced by bacterial growth in the intestinal lumen. This is a problem which biochemistry still has before it.

The bacterial condition as well as the hydrogen ion concentration of the intestinal tract, is not favorable to the growth of the histamin producing colon bacilli until the residue of the meal has reached the cecum. But in spite of that, the time that the meal occupies in passing from the oesophagus through the highly acid stomach and through the alkaline twenty feet of small intestine, is entirely too short to permit of the production of any considerable quantity of histamin by bacterial growth, were the excessive acidity and alkalinity not inhibitory. In the cecum the meal is liquid and rapidly assumes the optimum hydrogen ion concentration for the production of histamin or other toxines from the tailings of histidin constantly passing the iliocecal valve. But the stay of the meal in the normal cecum is brief, less than twelve hours at the most, and this is too short a time for the production of any ex-

cessive amount of histamin, even by the most potent germ now known. It is true that the cecum holds 600 c.c. or more of liquids, and is in constant antiperistalsis. Its contents are continuously supplied from the appendix with colon bacilli, and uniformally with the same species. Any growth once begun in the cecum would be likely to continue. It does not seem possible, even with the most potent germ that is known, that histamin production could go on to a toxic point in a cecal residual, however fortuitously that residue is combined, *unless the meal remained in the cecum much longer than the maximum normal* of twelve *hours.*

But there is abundant evidence at hand of prolonged cecal retardation in nearly all dementia praecox patients, and this retardation extends from fifty-four hours to several weeks. The cecal delay has been early detected by the barium meal and fluoroscopy made at intervals of twelve hours or more. In chronic cases both the cecal delay and enormous dilations and saculations of the colon are observed. *It seems highly probable that when the conditions favorable to the production of simple bases like histamin are present, that the same conditions will be favorable to the production of more toxic combined molecules.*

If we allow then the cecal delay, the properly proportioned and constituted histidin containing meal, the optimum temperature and hydrogen ion concentration for its growth, the most potent catabolizing bacillus, the most favorable fluidity of the meal and an adequate cecal peristalsis, and normal absorption by the cecal mucosa without any protective catabolization by the cecal mucosa, we must still find a cause for the delay or retardation.

We have in dementia praecox a protracted cecal stasis which seems to afford opportunity for the production of toxic substances adequate to the destruction of the brain cells and the initiation of the mental symptoms for which the name is given. We must consider, however, the genesis or etiology of this delay.

So many dementia praecox patients had been operated upon before the onset of their mental symptoms, for the removal of the appendix, that at first the adhesions about a displaced, sick appendix were accused of the obstruction, but fluoroscopy of the advancing barium meal, and occasional laparotomies, did not sustain this surmise. Fluoroscopy, however, did demonstrate a tonically contracted ring of Cannon. It was possible to force through this ring pastels of the barium meal and see them tumble end over end through the transverse colon.

One might at once suggest that such a condition was not exceptional in sane persons. The fact is admitted, but these sane persons are generally sick and sometimes very sick.

Again it might be averred that a spasm of a gut or sphincter could be demonstrated by giving the patient a large dose of atrophin, or of adrenalin hypodermically. No great success came from the use of atropin, but this is negative evidence. Perhaps we were not skillful enough or brave enough to give the appropriate dose of atropin. We succeeded with neither.

In spasm of the pylorus and spasm of the cardia, a spasmophilic condition has been demonstrated, which seems to be due to a calcium poverty of the nervous mechanism, and of the blood. This calcium poverty is the basis of tetany. Spasm of the circular fibers is also produced or encouraged by some of the toxic amines which are produced

in the cecum. In many dementia praecox patients it is possible to demonstrate a spasmophilia by the ordinary clinical tests, though, so far, no adequate chemical studies have been made.

Therapeutically, the use of calcium lactate in large doses with phosphorated cod liver oil, has not relieved the spasm of the sphincter of Cannon, in our cases in which it had been shown by separated barium meals and fluoroscopy.

The only successful means of emptying the cecum, so far attempted, has been the daily irrigation of the cecum through an appendicostomy. The first time this operation was performed on a dementia praecox patient, it was undertaken in the treatment of amoebic dysentery. The improvement in the mental condition was remarkable and permanent. Since that time several patients have been treated by daily irrigations, and some of them have recovered; many have been benefited, but some have made no improvement. At the present time it seems desirable to use anti-spasmophilic remedies, calcium and phosphorus, benzyl benzoate and iodides, and also, or at least, daily irrigations of the cecum through an appendicostomy with ten quarts or more of yeast containing water, with outdoor life as an adjunct.

One may question so simple and so uncomplicated a presentation of sequences, and urge that the conspicuous and common sexual disturbances have been left out of the pathologic program of the disease. It is well recognized that the sex glands in male and female dementia praecox patients are almost uniformly and excessively small, and that the testicles are devoid of living spermatozoa. The exacting and remarkable experiments of Carlo Ceni demonstrate that the broken-down molecules of destroyed neuroglia of the cortex are toxic to the testicle and ovary of animals. Repeated concussion of the brain in cocks, resulted in shrinking of the ovary and testicle and the disappearance of living spermatozoa. It seems likely that in dementia praecox the destruction of brain substance is followed by testicular and ovarian disorganization for the same reason. The sexual abnormalities are then reduced to the sequence of stimulation, irritation, disintegration and atrophy or shrinking.

There is very much to be done before this pathologic outline can be filled in with guarded experimental scientific demonstration. The extent of the disease is alarming. More than 140,000 of these unhappy and abandoned youths are deteriorating in the custody of our forty-eight States, serving out their average of sixteen years of commitment. These forty-eight sovereign States are pursuing the same pessimistic policy of standardized custody, and they are outdoing each other in the neglect of research. Deportation is active.

Our professional keepers of the insane can hardly be expected to initiate active therapeutic measures on any of the deteriorating, irrational and unapproachable wards of the State, because active therapeutics are not directed or supported by psychiatric research or administrative policy. It remains only for old-fashioned, unsalaried, curing doctors to institute hazardous and novel therapy before the patient is abandoned to legal commitment and administrative custody.

Twenty thousand or more of our high school youths, or youths of high school age, will enter the state hospitals during the coming year. In these institutions one in a thousand will recover and be sent home

relatively well. Any therapy which would restore one in a hundred would be good therapy. It ought to be undertaken before commitment and carried out by ordinary practitioners of medicine. But with early cases of this disease, there is reason to think more than one in ten would be actually cured by the methods we propose and for which we plead. At Yankton State Hospital seven were thus treated; one died of the surgical operation; two were not improved and are still in legal state custody; one was improved and returned home, but not able to return to productive labor, and three were so perfectly recovered that they returned to their former occupations. By this therapeutic experiment the State of South Dakota is saved the custody of four patients —four homes are rejoiced.

If *restitutio ad integrem* is expected, treatment must be begun before the destruction of the neuroglia is extensive or irreparable. It must, therefore, be early in the onset of the disease. Although remarkable and almost complete recoveries have taken place after five to fifteen years of custodial confinement, it is not reasonable to expect old patients to react as favorably as early and young patients. Therefore, the hope of the 20,000 youths who are to be committed during 1920 rests with the family doctor, with the consulting alienists and with general professional opinion. In modern times professional opinion in novel therapeutics is strangely diffident and tardy until supported by newspaper-made public interest. Until Lyman Gage, then president of the First National Bank of Chicago, was taken from the train to a New York Hospital operating room and his appendix removed, appendisectomy was the rarest of operations. This incident furnished the appendicitis story, a live reporter told it, and the daily press did the rest. It set forward medical and surgical practice ten years. It educated the physicians of the United States more thoroughly and effectively than the attendance of 50,000 of them at a post graduate school would have done.

Dementia praecox is a greater calamity than appendicitis, though not so dramatic in its treatment and cure. It is just as democratic a visitor as appendicitis, and is to be expected during 1920 in the families of the rich and powerful as well as among the sons and daughters of the poor and humble. Its ravages are more disastrous and terrible than those of appendicitis, to which it is anatomically, though not symptomatically, related. The dangers of appendisectomy and those of appendicostomy are about the same. The surgeon fitted to do the one is capable of performing the other. Inflammation of the bowels was as irremediable a calamity in 1887 as dementia praecox is today. It was not the rank and file of physicians and surgeons who revolutionized treatment, but public opinion cultivated by the lay press.

Scientific indecision and salaried temerity may rob the 1920 class of twenty regiments of dementia praecox patients of all hope of therapeutic succor, but this will not last forever, for when the family doctor can early diagnose the oncoming disease, and safely initiate rational and effective detoxication, these practitioners will save many an adolescent from this destructive and terrible condition. Moreover, the time is coming when massive scientific research will empty the back wards of our State Hospitals of the abandoned, as individual research has already emptied our civil and military hospitals of typhoid fever.

PSYCHOANALYSIS.

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THE term psychoanalysis is applied to that particular form of treatment and investigation of the neuroses as first elaborated by Freud, whose object is to remove the unconscious sources of the individual's nervous disturbance. The treatment is generally applied to relieve that class of nervous sufferers presenting such symptoms as obsessions, morbid fears and compulsial thoughts and acts, often out of harmony with the person's training and character. It is also helpful in clearing up many personal peculiarities in those who are not actually nervously diseased. It is the only form of the investigation of the neuroses which explains why certain symptoms occur, as in the past physicians have been too prone to interpret nervous symptoms, particularly the peculiar and contradictory behavior of hysterical patients, as a form of inexplicable stubbornness. Psychoanalysis, like the surgeon's knife in opening the unclean wound, opens the mind, discovers what are the disturbing thoughts and then helps the patient to remove them. The aim of psychoanalysis is two-fold: First, to educate the patient to become an independent personality by directly freeing him from his neurosis and, therefore, from his infantile limitations so that when the dependence of the physician is cut off the patient can be put on his own feet; and, secondly, to relieve the repressed emotions that they may be indulged in freely and unhampered, partly by conscious control and partly by conducting those emotions to a higher and less objectionable goal.

Studying the characteristics of the buried stratum of the mind was gradually extended, as one field after another opened up, and with increasing knowledge it became more and more possible to trace the indirect operation of the unconscious even where at first sight their existence was hardly, or not at all, suspected. Or, to put the matter in another way, it has become more and more possible to detect the contribution made by the unconscious to various modes of mental activity that have hitherto been thought purely conscious in both appearance and origin. Regarding the primitive nature of the unconscious, one cannot be surprised that the genetic aspect of the whole subject has assumed a great importance, for evidence is constantly accumulating to show that there is a detailed genetic continuity throughout the mind, that the study of its ultimate sources, which in the nature of things can hardly be elsewhere than in the primitive, unconscious tendencies, becomes of especial interest. In this way, bit by bit, a genetic theory of the mind as a whole has gradually been built up, some of the features of which will now be indicated.

Freud holds that a great part of mental life, perhaps the whole, can be summarized under two principles, which he terms the pleasure-pain principle and the reality principle, respectively. The former represents the primary, original form of mental activity and is characteris-

tic of the earliest stages of human development, both in the individual and in the race; it is, therefore, typically found in the mental life of the infant and, to a less extent, in that of the savage. Its main attributes are a tendency, on the one hand, to avoid pain and disagreeableness of whatever kind and, on the other, a never ceasing demand for immediate gratification of various desires of a distinctly primitive and lowly order; all this at literally any cost. It is, in other words, ruled entirely by the pleasure-pain principle. It is difficult to distinguish the two tendencies first mentioned, even if they are—which is by no means certain—different in their nature, for it is likely that the organism treats the desires in question in very much the same way it does painful stimuli, namely, as molesters of its peace whose disturbing influence has to be stilled by means of reactions appropriate to that end. The principle is thus exquisitely egocentric, selfish, personal and non-social. The thought processes corresponding to it proceed by the use of analogics and superficial associations, treat resemblances between different ideas as equivalent to identities, ignore all the laws of logic and make no distinction between a phantasy and an actual situation of life. Soon, however, this tendency comes into conflict with the reality principle, which in all probability is genetically related to it. The function of the latter is to adapt the organism to the exigencies of reality, to subordinate the imperious demand for immediate gratification, and to replace this by a more distant but more permanently satisfactory one. It is thus influenced by social, ethical, and other external considerations that are ignored by the earlier principle. It can, however, only guide and control the pleasure principle, adapting this to the environment; it can never abrogate its activity. The fate of the primary pleasure principle, and the modifications it has to undergo before being allowed to manifest itself, is one of the central objects of psychoanalytic study.

Significance of the Unconscious.

The significance of the unconscious as defined above, may be discussed under four headings. In the first place, a knowledge of the content and mode of operation of the unconscious furnishes us with a key for the understanding of numerous manifestations that were previously incomprehensible; it has given us a consistent interpretation of them and has revealed their coherent and intelligible structure. Without this knowledge no solution can be found to such problems as, why a given patient has developed this or that particular delusion, phobia, doubt, obsession or other symptom; with this knowledge the bizarrerie and meaninglessness with which we are so familiar in psychopathology disappear or are replaced by quite other problems. The reason for this is that all psychopathological symptoms arise in the unconscious, which is the true seat of the disorder, so that the investigation of it is of cardinal importance for both pathology and therapeutics.

In the second place, a knowledge of the unconscious makes clear not only the meaning of these symptoms, but also the causation of them. They are, namely, compromise formations produced through the conflict between unconscious and conscious tendencies, and are brought about in the following way. I pointed out elsewhere that normally a great part of the energy pertaining to the repressed trends of the unconscious is diverted to permissible, social aims, a process known as

sublimation. This denotes a partial renunciation of the crude pleasures obtained by indulging in the primitive tendencies that are kept from consciousness and a replacement of them by other, more or less, satisfactory refined ones. Now a great number of people find it by no means an easy matter to achieve this renunciation, and are in constant danger of relapsing into the old indulgences and gratifications under various circumstances; particularly, when the attractions of the more refined aims flag, as they must do whenever the mental environment becomes more painful, difficult or disagreeable. Then the mental interest and energies are apt to regress towards older and more primitive modes of functioning. This regression, however, is checked by the repressing forces on which the original sublimation depended. In the resulting conflict neither set of forces is entirely successful; on the one hand, the repressing ones manage to prevent a complete return to the primitive modes of gratification, while on the other, they fail in transforming the energies in question into sublimated activities. A compromise is reached whereby both sets of forces come to expression, though only in a partial and disguised way; these compromise formations are clinically called symptoms, and constitute the various psychopathological maladies.

As was hinted above, the actual symptoms do not carry their meaning on the surface but have to be interpreted and translated into the language of the unconscious before that can be reached. To do this, a knowledge is necessary of the different mechanisms by means of which the distortion is brought about that changes the underlying repressed trend into the manifest symptom; it is impossible, however, here to discuss the nature of these mechanisms, such as displacement of the affect, inversion, projection, introfection, transposition, and so on. It can only be said that the distortion is brought about in perfectly definite ways and through the operation of specific factors, which vary in their exact nature according to the past experiences and mental development of the individual concerned.

In the third place, the knowledge gained by investigation of the unconscious bridges over the gap between the normal and the abnormal by demonstrating that the same processes go on in both, though the control of the unconscious ones by consciousness is greater in the case of the former.

Last, but not least, is the reasonable aid that this knowledge has yielded for the treatment of psychopathological maladies. Up to the present this has, it is true, been far greater in the case of the psychoneuroses than in that of the psychoses, such as paranoia, dementia praecox, but there it has already proved so valuable that one is justified in entertaining the hope that further researches may be profitable from this point of view in the case of the latter group also. The mode of treatment by psychoanalysis is the overcoming of the resistances that are interposed against the making conscious of the repressed unconscious material, gives the patient a much greater control over this pathogenic material by establishing a free flow of feeling from the deeper to the more superficial layers of the mind, so that the energy investing the repressed tendencies can be diverted from the production of symptoms into useful, social channels.

Dreams and the Unconscious.

Before the various dream mechanisms are discussed in detail it will be necessary to give a brief outline of the psychoanalytic conception of the unconscious mental life, as this enters so largely into the formation of dreams. The term "unconscious" does not connote, as in the popular sense, lack of consciousness, but signifies mental processes of which one is not aware and cannot spontaneously be brought to consciousness, but which may artificially be recalled by means of the special technique of psychoanalysis; or, which arise spontaneously in dreams, psychoneurotic symptoms, or the various symptomatic actions of everyday life. The unconscious contains nothing that has not been learned, thought, or experienced. Unconscious mental processes are not mere physiological nerve activities, but are psychically active and dynamic; in fact. they have all the attributes of normal thinking, but lack the sense of awareness. These processes remain unconscious because they are prevented from reaching consciousness through a force termed resistance. This resistance, which it is impossible at this point to describe in detail, is of great importance in the analysis of dreams and in the psychoanalytic treatment of functional nervous disturbances. Only thoughts which are emotionally painful or disagreeable, and which we have repressed either in adult life or childhood, tend to remain in the unconscious.

Thus unconscious thoughts may be repressed not only in the acts and thinking of every-day adult life, but also in our childhood, the latter forming what is known as the infantile unconscious. This infantile unconscious is of great psychological and practical importance, because in it the thoughts are so deeply buried by the resistances imposed through mental and moral development that it becomes very difficult of access. It is, however, clearly revealed in certain typical dreams. such as the dream of the death of one of our parents or the dream of being dressed in insufficient clothing. Such dreams reveal our infantile unconscious and, therefore, our childhood wishes although the exact memory for these wishes apparently may have vanished long since. It is such wishes, from the infantile unconscious, that also reveal themselves in many nervous symptoms of the adult life, such as phobias, obsessions and hysterical symptoms. In fact, upon analysis nearly all dreams will be found to contain some elements from the infantile unconscious, or highly tinged by it.

The latent (unconscious) thoughts which motivate a dream are furthermore complicated by our conscious thoughts and also by daily instigators or physical discomforts arising during sleep. However cleverly or completely we may decipher or analyze these, if the unconscious thoughts are not reached and laid bare, we can never fathom the real meaning of the dream, because it is the unconscious which makes the dream, although the unconscious may be thrown into activity by conscious thoughts or organic stimuli. Since the only function of the unconscious is wishing or desiring, the dream as a wish fulfillment can never be completely understood until we have these unconscious thoughts in our possession. Dreams are therefore the royal road, in fact, the easiest road, to a knowledge of our unconscious mental life.

Thus the unconscious contains not only recent experiences, but likewise impressions of infantile or childhood life, all of which are actively

and dynamically functioning like conscious processes. The unconscious is, therefore, the great repository of our mental life; in it are contained thoughts and wishes which may be foreign to our personality, to our moral or ethical nature; thoughts which we constantly and apparently successfully repress, but which inadvertently and to our surprise suddenly crop out as symptomatic actions, psychoneurotic symptoms, or dreams. All functional nervous disturbances, dreams and slips of the pen or tongue are motivated by unconscious mental processes, of which they are the symbolic expression. The unconscious is a kind of limbo of seemingly forgotten groups of thoughts or complexes, which are constantly striving to reach consciousness and are just as persistently rejected by the repressive action of the censor. But frequently the censor nods and is caught unawares, the repressed wish slips through in the form of a dream, and we are repeatedly surprised to discover how primitive, how selfish and savage may be our unconscious desires. Accordingly dreams reveal, either in a literal or symbolized form, our unconscious, which is our true mental life, and not our outward activities, which are changed by the conventionalities of society. As a heritage of our long ancestral line from primitive man, there remains in all of us something of the barbarian and savage, which has become repressed and veneered by the refinements of culture and civilization. It is in the unconscious, where we have repressed it, that we find the traces of our savage ancestry. The unconscious is barbaric and primitive in its elements and likewise unethical, because ethical interpretations of motives occur only in states of advanced civilization. Thus the unconscious contains not only our adult and infantile characteristics, but the emotions of the childhood of the human race as well.

Thus, the existence of the unconscious is the result of a repression, and the unconscious consists wholly of repressed material. For instance, certain ethical or moral standards may conflict with the individual's personality and it is exactly these standards which undergo the process of repression. Such standards are of the nature of wishes which are constantly striving for real gratification in every-day life, or in psychoneurotic symptoms and for imaginary gratification in dreams. The fact that these standards are repressed is the most convincing proof of their existence.

This repression of emotions at the same time admits their reality by trying to avoid and negate them. The effort of these repressed emotions to find an outlet leads to all forms of nervous invalidism, such as so-called nervous prostration and various types of morbid fears. Such individuals externally appear cold and austere, apparently emotionless, and lacking all essentials of human feeling, yet their dreams show various degrees of forbidden desires which only in this manner come to expression. Conditions like these teach us that we are all emotional volcanoes, and when we pride ourselves on having subdued our emotions and in not yielding to so-called vulgar feelings and temptations. nevertheless, it is certain that, hidden within the depths of our unconscious, these repressed desires are as potent and active as though they assailed every second of our conscious thinking.

Mechanism of Dreams.

1. Condensation.—Every element in the manifest content represents the fusion of several in the latent thoughts, and *vice versa*. The latent content is condensed to a tenth or a twentieth of its original extent. The condensation is shown in several ways. For instance, a figure in a dream may be constituted by the fusion of the memories of several different actual persons, either by fusing some traits to one with others of another, or by making prominent the traits common to different persons and neglecting the ones not common to them. The same process frequently affects names, so that neologisms may be formed exactly analogous to those found in the psychoses

2. Displacement.—The psychical intensity of a given element in the manifest content shows no correspondence with that of the associated elements in the latent content; an element that stands in the foreground of interest in the former may represent the least significant of the latent thoughts, and an apparently unessential feature in the dream may represent the very core of the dream thoughts. Further, the most prominent affect in the dream frequently accompanies elements that represent the least important of the latent thoughts, and *vice versa*.

3. Dramatization.—The manifest content depicts a situation or action, a fact which exercises a selecting influence on the mental processes to be presented. Logical relations between the latent thoughts are as such not represented, but they may be indicated by means of certain special devices. Thus, similarity may be represented by identification, casual relationship by making the one representing groups of elements follow on the other opposition and contradiction by inverting the two corresponding elements of the already formed dream and so on. The characteristic, that most dreams show, of presenting the manifest content predominantly, in a visual form, Freud terms "regression," and explains it by a very interesting theory in which he also discusses the production of psychotic hallucinations.

4. Regression.—The statement of the regression of the libido to childhood is one of the apparent paradoxes of the newer psychology and is to be explained in the following manner:

When a person is ill, he is, in more than one way, in a condition very like infancy and takes the same satisfaction that an infant takes out of the situation of being an infant. He has a nurse who humors him, amuses him, washes him, feeds him. He is free to indulge his idle fancies. Any situation approaching this, in any way, has in it more or less of the element of infantility. It is quite natural for adults to look upon an illness as a rest after great efforts or mental strain and it is quite comprehensible that some adults, unconsciously if not consciously, regard the milder degrees of ill health as a means by which they may control the situation, and, unconsciously at any rate, wish to gain that control at any cost even at the cost of personal pain and weakness. In such weakness there is great strength, and the unconscious evidently avails itself of this opportunity to secure power, particularly when the desire for power is blocked in other directions, as it inevitably is in ill success or disappointment of many kinds. For a person who is really ill everyone is ready to do favors, and particularly for children, because nothing is as pathetic as a sick child. In illness the child regresses to the helplessness of the infant and by his very helplessness exerts a power

over all the persons in his environment. It thus happens that the child who has a serious illness suddenly finds himself with everyone about him subject to his lightest caprice. This unexpected accession of power makes a deep and unforgetable impression on him and it is no wonder if he strenuously objects to losing his power. In fact, everyone knows how difficult it is to take away privileges from anyone. And the child is not expected to have any sense of social obligation or to understand that his requiring all the attention of at least one person all the time is an economic waste. In fact, very few adults think as much of this as they should.

The aim of every individual should be economic productiveness. This consists not merely in growing grain or other agricultural products, or mining or even in commerce through making the products by transportation available to many people, but it also consists in giving pleasure through works of art, thus furnishing the emotional incentive necessary to any kind of productive activity.

In psychoanalytic treatment a patient learns to observe the fleeting thoughts, whether in phantasies of the day or in those of the night, which we call dreams. In these thoughts we get glimpses of the unconscious which contains the cause of the lack of adaptation. With the libido theory we can easily explain the tyrannical character of the wish of the patient with the paralyzed hand. Just at the age when the child had begun definitely to decide on certain action upon which to direct her libido, her mother interfered. As a child at the seashore in attempting to fill its pail with sand is sometimes interfered with by mother or nurse, who hovers over the child and cannot let it act itself, so the mother of this patient foresaw each childish purpose and in more senses than one, always filled her sand pail for her, time and again driving back the increasing libido until it flowed back into its infantile paths. This is known as a Regression of the Libido.

Of course, the mother herself was still partly or wholly living in her own childhood in making a doll out of her child. By treating the girl as an infant the mother prolonged her own sense of power to the mental injury of the girl. We may say that the wish to tyrannize arises from the regression of the libido to infantile paths and that because of such regression the mode of adaptation to life will be infantile. On this plan the individual expects to find in the world of external reality the same friendly reception from every one as from its parents and to obtain with no trouble an easy success. When an obstacle is encountered such an individual shrinks back rather than pushes ahead to overcome, and this attitude is generally caused by the child within the individual making up its mind to let the parent go on and fill its sand pail. In this simile the sand pail is the world work demanded of the child and now the child virtually says to the world, which it finds in the place of its mother: "All right, you insisted on filling my sand pail for me when I wanted to do it myself. Now you want me to do it; you can go on filling it yourself and you'll get a disappointment equal to mine when you wouldn't let me." It makes no difference with such people that the world is not the mother, the child behaves to both the same, unconsciously, because its disposition toward things not itself was crystallized in early life. The process of gradual spiritual weaning from the home, represented by the mother, should be begun even

before the first sand pail and shovel, or the mother-infant attitude will be maintained in spite of any conscious desire that may later come to terminate it. No matter how strong the conscious wish, the unconscious is stronger simply because unknown.

If possible, the obstacles in the way of the child are removed by him with childish methods. "I will kill you," says the small boy, when you interfere with his pleasure. The Emperor Nero furnishes a colossal example of this infantile method of control of surroundings. His libido was blocked and repressed due to the managing and dictatorial tendencies of his mother, until it reached the primitive condition of a savage with unlimited cruelty, in which he murdered his own mother. Nero solved his problems in an infantile manner. Not from his own efforts but from the efforts of his ambitious mother came his wish to be an emperor. Completely astray as to his moral qualities he never realized his own weakness. When he wanted to enjoy a bonfire he burned a city.

5. Identification.—Something of this reading himself into his objects begins with the child at a very early age, for when he begins to talk he takes many inanimate things to be alive and active. He will scold his toys. If he bumps himself against the table it is as much the table's doings as his. When we trip over an obstacle and hurt the shinbone, how much satisfaction we feel in giving a good kick to the offending obstacle, for down deep in us all is the feeling that the obstacle should have gotten out of the way and was malicious in hurting us. Intellectually we know that the rocker or a chair is inanimate, but when we are bruised and sore from coming in contact with one we feel that the protruding thing molested us. The intellectual knowledge that the rocker is inanimate is a conscious thought, but the feeling that the rocking chair should have moved aside and not stood in our path to hurt us comes from the unconscious. Not only do we all thus endow inanimate things like rocking chairs with life, but in a dream brought by a patient the rocking chair is a symbol of something more than a chair and to learn what the chair symbolizes in the unconscious we must trace back the thoughts which come to mind concerning it. We call these thoughts "associations" and the associations with a rocking chair were "cradle, childhood, mother." The associations with the foot were "getting somewhere it carries us through life, takes us over a path we are going." Now, when we analyzed the wish to kick the rocking chair we found the conscious wish came from the unconscious wish to kick the mother out of our way. She had prevented us from getting somewhere in the path we wished to tread, and should have moved aside to let us go on in the world as we wished, but with malicious intent she has stopped our progress. Or, while she may have surrounded us with such an atmosphere of ideal sweetness and goodness that clings to us, we have to put her influence aside to make progress. She wants us to notice her and remember that she has the power of hurting us, a point of view on our part which will be understood from the parent-complex which I have described in the *Medical Record*.

6. Secondary Elaboration.—This is the product of consciousness, and is brought about by the alteration undergone by the dream processes during their apprehension in consciousness. To it is due what-

ever degree of ordering and consistency there may be found in a dream. It particularly affects parts of the dream that have been insufficiently distorted during the dream making; its action continues after waking, so that the memory of a dream becomes more altered the greater is the period that has elapsed since it was experienced.

The effect in the manifest content is invariably less intense than that in the latent content; this inhibition is due partly to the tendency to psychical regression during sleep, and partly to the suppressing effect of the censor. The affect is solely due to this displacement; in the dream thoughts it is quite congruous and logically justified. The effect itself undergoes no distortion in the dream making, as does the conceptual content, so that it is of the same nature in the manifest as in the latent content. The forgetting of dreams is, like the distortion of the latent content, a manifestation of the activity of the censor. The most important part is first forgotten and often is recalled only during the analysis.

The sources and material from which dreams are composed differ as regards the manifest and latent contents. In every dream appears some incident of the preceding day. Indifferent incidents, i. e., those of little interest to the subject, frequently appear. These may be of the preceding day, or of older date; in every case they have obtained psychical significance by becoming on the day of their occurrence, associated with significant experiences or memories. Somatic stimuli, e. g., pain. may sometimes provide material. These, however, are treated like other psychical material, and are woven into the dream under the same conditions; under no circumstances can they alone account for a dream, except in the sense of occasionally being an instigation. Hyperamnesia for previously forgotten infantile events is sometimes seen in the manifest content, and much more frequently in the latent content. The groundwork of every dream is of infantile origin. A recent or conscious wish is inadequate to cause a dream unless it is associated with a repressed, unconscious one; this latter is always the real cause, and the superficial one is merely the instigator. The latent thoughts are always of high personal significance to the subject, and are in direct continuity with the rest of his mental life.

The dream stands in the center of the psychoanalytic theory and gives us the best insight into normal and abnormal mental structures. Dream analysis furnishes the physician the most direct means of understanding various states, such as obsessions, fixed ideas, delusions, hyteria, etc., and is the most powerful instrument which he possesses for the removal of such pathological symptoms. The unconscious contains our repressed instincts, our erotic or sexual phantasies and it expresses these as symbolic wish fulfillments in dreams or in psychoneurotic symptoms.

The motive power for every dream is furnished by the unconscious, although this motive power may be set into activity by our conscious thoughts, pre-sleeping reveries, or physical instigators during sleep. A conscious wish in children or in adults may reinforce the unconscious wish, and it will be fulfilled in the dream. As Freud so well expresses it: "Experience teaches us that the road leading from the foreconscious to the conscious is closed to the dream thoughts during the day by the resistance of the censor."

At the bottom of every dream there lies a repressed wish in the unconscious, a wish which may appear disguised in the dream, and which can only be interpreted by an analysis of the dream. The theory that every dream represents the fulfillment of a repressed wish is one of the most important contributions of the psychoanalytic school, but it can be well substantiated by practical experience in dream analysis. Furthermore, as previously pointed out, the unconscious has no other force or function at its disposal, but wish feeling and their fulfillment. Of course, except in the very elementary wish dreams of children, the wish in adult dreams is hidden within the dream thoughts or latent content of the dream, and only in rare instances does it appear in the dream itself.

Dream Analysis.

As an example of a concealed wish, we may take the dream of a woman who dreamed that one of her brothers was about to be put to death by hanging. Such a dream appears to contradict totally the theory that dreams represent wish fulfillments, often the fulfillment of wishes impossible in reality, for one would at once say that no woman would be so heartless, so devoid of feeling as to entertain such a wish against her brother. If the dream is interpreted literally such a criticism would be well taken, but the remembered dream (manifest content) as previously pointed out is merely a disguise of the underlying unconscious thoughts which produced the dream. What, then, are these thoughts? Why does this woman's unconscious self wish her brother to be hanged, when her conscious thoughts, nay, even her whole moral being would revolt from such an idea?

The analysis fully disclosed the reason for such a dream. It developed that the brother who was seen in the dream was a fusion or composite picture of two of her brothers, one of whom had died eight years previously of tuberculosis, and the other four years ago of cancer. After the death of the first brother the dreamer had for some time been troubled with a cough, and although assured that her difficulty was not tubercular, she had never been able to dispel fully the idea of tubercular infection, particularly since she possessed a certain fear that the disease was hereditary. The dream itself occurred shortly after an operation for a small, non-malignant tumor, which had been growing for a number of years, and which she had feared might be of a malignant character. This fear was also somewhat exaggerated and fortified owing to the fact that her other brother had died of cancer. and she had become more or less obsessed by the idea that perhaps cancer, like tuberculosis, might be hereditary. In a way, this fear of a cancerous or tubercular heredity had worried her for a long period. With these data in mind, the meaning of the dream becomes clear. Its wish as disclosed is not the desire to have her brothers hanged, but a longing that she be free from any physical disease with the slightest hereditary taint, for the purpose of calming her anxieties and her almost obsessive attitude towards heredity. Therefore, the dream means that she wishes her brothers had died of some disease other than cancer or tuberculosis. (As these diseases might be hereditary and she might also fall a victim to one of them) ; in fact, even hanging would be preferable so far as her peace of mind was concerned.

The Freudian Wish.

The term "Wish" in psychoanalysis is very comprehensive and connotes in a broad sense all our desires, ambitions, or strivings which are fulfilled in our dreams, if not in reality or in reveries, principally because such wishes or desires are strongly repressed from personal, social, religious, or ethical motives. Children have no such motives, therefore, the wishes of the child's waking life and its dreams at night are identical.

The latent content of every dream is the imaginary fulfillment of an ungratified or repressed wish, but a wish cannot produce a dream, unless such a wish harmonizes with the whole or a portion of the unconscious self. Thus a mental conflict frequently arises, the repressed unconscious wish constantly striving to enter consciousness, which it can accomplish only in a dream. Dreams and nervous symptoms have frequently the same construction and mechanism; both represent conflicts between wishes, i. e., the wish to forget and the wish for fulfillment.

The source of the dream wish may lie not only in the thoughts repressed into the unconscious, but likewise in actual desires arising during the night, such as thirst. For instance, if a feeling of thirst arises during sleep, we may dream of gratifying this thirst through drinking. Since the thirst is gratified in the dream, the wish for a drink is fulfilled and sleep remains undisturbed. Therefore, this, as many other dreams, serve to protect sleep; the wish has incited a dream in which the wish is fulfilled, instead of awakening the sleeper for the fulfillment of the wish in reality.

Now a wish or conflict between wishes may not only cause an hysterical disturbance, but likewise may show itself in the dreams of the individual who suffers from hysteria. For instance, a young woman who had an anxiety hysteria with feelings of perplexity and indecision causing certain emotional attributes which she believed she lacked, had a dream in which she saw herself in a disguised form and apparently made up of the figures of three women friends. On analysis it could be shown that this fused or composite figure of herself represented certain desired attributes, and the three women had these very attributes for which she longed. Therefore, the fusion of these three figures into a new person representing herself and yet not herself was a fulfillment of her own wishes; and, furthermore, the women were not accidentally chosen, but deliberately selected to harmonize with these wishes. Thus no dream element, figure or situation is accidental; it is the product of our repressed unconscious wishes, of which the dream represents the logical fulfillment. In other words, every dream element is predetermined or motivated by our unconscious mental life. The fusion of the three figures into the new personality in this dream was a prearranged plan of the subject's unconscious, which took this method of fulfilling certain wishes which could not be gratified in reality.

Examples of this wish-fulfilling function in the simple dreams of adults are as follows:

A young woman who had started to study aesthetic dancing and had purchased a pair of new ballet slippers for that purpose had the following dream after having had one dancing lesson: She dreamed that she was walking in the street with her ballet slippers, and that

these were worn almost threadbare. The analysis showed that she had compared her new slippers with those of the more advanced members of her class who were making rapid progress and who knew more than she did about aesthetic dancing. The instigator of the dream seemed to be a remark made by a woman in the class, who pointed to her worn-out slippers and said: "These are my second pair this season." Thus the dream fulfilled her wish that she might be further advanced in dancing, a wish symbolized by the threadbare slippers.

A young man, on a short visit to a congenial household, dreamed that the recently planted bulbs in this household had sprouted and bore flowers. The wish in this dream is perfectly clear; it expresses the desire to prolong the visit, and this is expressed by the length of time it takes bulbs to grow.

The following dream is of interest as it contains both an adult and a childhood wish. L. (the dreamer's daughter) and I were bathing with others at dusk near a wooded slope. Suddenly someone said: "Isn't it too bad, a boy and a girl (or a mother and daughter) have been drowned (or killed)." I expressed my sorrow, came out of the water, and began to hail L. through the darkness: "L., where are you! I want my clothes!" As I mounted the hill, a large, handsome woman passed by. She looked sad. I appeared to be only partially dressed, having only my trousers on, but did not feel in the slightest degree embarrassed. I asked the woman what the matter was, and she replied that she had lost someone dear to her. Then she disappeared. It was day, and I appeared to be alone on another landscape, looking at myself borne up the hill on a litter, apparently dead. Just as if I were someone else, I cried out to my daughter: "L.! L.! What's the matter?" She did not answer. I reiterated my question more anxiously and then L. smiled. I lifted myself from the litter and began to laugh.

The obvious instigators of this dream were the accounts of the European war (wounded soldiers carried on litters) and the fact the subject was at a mountain resort, where there was bathing in a mountain pool. An interesting point of great significance in the dream is the doubling of the principal character; in other words, the dreamer appears twice in the dream, once alive and once dead. This doubling process thus reinforces the wish concealed within the dream; namely, that the dreamer be alive and younger so that he may accomplish more work. This doubling process is an important mechanism, the same as the twin-motive so often found in mythology, or when a legend is related twice, like the two Babylonian and Hebrew accounts of Creation. Both these are for the purpose of emphasizing anew and thus reinforcing the original legend; or in the dream for the purpose of reinforcing the primary wish like a dream within a dream. That portion of the dream in which the dreamer found himself only partially clothed represents a reversion to childhood days.

To interpret or analyze a dream means to find out its inner, and often hidden, meaning to collect the thoughts or mental processes which have produced the dream and out of which the dream is constructed. The analysis of dreams is a highly technical procedure, and like other technical methods must be fully learned and mastered before it can be adequately handled as an instrument to penetrate the deepest and most significant aspects of our thoughts. No amount of reading can

make a psychoanalyst any more than one can expect to paint portraits by reading how to do it. The success of a psychoanalysis of a dream depends upon the subject whose dream is analyzed. He must tell everything that comes into the mind concerning each element of the dream and not suppress or brush aside an idea becaues it appears unimportant or of no significance. No association that arises is too trivial for the analysis; everything is essential.

The Treatment.

The length of time necessary for the treatment is often urged as an objection to its applicability, and may certainly be a matter of practical difficulty. One of the patient's first questions when a course of treatment is proposed to him, very naturally is, "How long will it take?" It is often an embarrassing one to answer, and for the following reason: The duration depends not only on the nature and severity of the neurotic condition, which can usually be estimated in one or two interviews, but, also, and to a still greater extent, on the type of personality we have before us. It is not so much a question here of the variation in intelligence, self-insight, determination, and other character traits that occurs among different patients, important as these are, as it is of the mental attitude towards recovery. This attitude is one that sharply distinguishes psychoneurotic disorders from all others. In the latter, one assumes, usually with right, that the patient wholeheartedly desires to get better, and this is often a factor of no mean importance in the fight; but with any neurosis one may predicate with a certainty that only a part of the patient's mind is set on recovery, the conscious part that leads him to seek help, whereas another equally significant part is just as set on remaining in the neurotic condition, and that in spite of all the obvious disadvantages of this. It matters not at all how much the patient may protest his eagerness to get well at all costs; one knows definitely from the very facts of his suffering from a neurosis that he is in a state of internal conflict, that one part of his mind is worrying against another and that his condition is the result of this. A neurosis essentially means that the patient is unconsciously, clinging to various infantile pleasurable longings and phantasies, long since buried through the repression of inhibiting forces and hence quite unknown to the patient, and that his symptoms, an expression of this conflict, constitute a compromise-formation by means of which he vicariously obtains an indirect, symbolical qualification of these; this is the ultimate basis of any psychoneurosis, though, of course, other later factors are also concerned, the more current conflicts between the patient and his actual situation in life that are more generally observed by himself and the physician. It follows from this consideration that recovery from a neurosis always involves an element of renunciation on the part of the patient; he has to learn to turn his interest away from the world of phantasy, however pleasurable this may be in his unconscious, and devote it rather to the external world of affairs. Renunciation is never one of mankind's easiest feats, and we note a considerable variation among patients in this respect. It is less difficult of accomplishment when the phantasies in question lie mainly in the past; when the shirking of a current difficulty

has been an important contributory factor in the patient's withdrawal into himself, then the task is harder.

The estimation of this important personal factor needs time, so that one can never say before hand exactly how long a given treatment may last. In these circumstances the only thing to do is to fall back on one's general experience and state the matter in average terms. I find that the average length of treatment is about a year, the shortest being six months while a few cases even require two or three years. Those who are familiar with the immense amount of work involved in such a treatment, and the revolution that is effected in the patient's mind, will appreciate why such a long period is necessary, especially when the long duration of the symptoms in most cases is also taken into account. Efforts have been made to shorten the time but with a more than negative result, for refinements in technique have only brought about a higher standard as regards what we may properly term a cure, and it has also been perceived that the mere passage of time is in itself a mechanical element that is indispensable to the workings of the treatment. The only practical aid that I know of is the plan of getting the patient to attend for two hours a day, either consecutive or not, instead of the usual one.

The Case.

It may be said that, with relatively few exceptions, all cases of psychoneurosis are suitable for the treatment; the contra-indications are sufficiently well known, so that I need not enumerate them here. The treatment has been extended on to the field of the psychoses, but naturally with less favorable results; although symptomatic improvement may in this way be obtained in certain cases of dementia praecox, particularly the catatonic variety, the psychosis that is most promising in this respect is manic-depressive insanity, especially the cyclothymic type, and here some highly gratifying results have been achieved. Apart from the psychoneuroses proper, one finds in practice that patients come for such apparently non-medical conditions as failure to devote interest to their work, marital or family friction, and various other forms of dissatisfaction with the immediate environment or with life in general, and one is often able to help such patients to a quite surprising extent. Sexual inversion and the perversions are also in general amenable to the treatment, as are alcoholism and other drug habits; but here even more than with the psychoneuroses the prognosis depends mainly on the patient's real desire to be cured; if, for instance, a homosexual regards his condition as perfectly intelligible and natural, as is often the case but expresses a mild wish to have it changed on account of its practical inconveniences, legal and otherwise, the chances of success are much fewer than with a patient who has a strong abhorrence of what he considers an unnatural but incontrollable impulse.

The superiority of the psychoanalytic treatment does not manifest itself in the same manner with these different conditions. With hysteria, for instance, where showy results are often to be obtained by other methods it is not always at first sight very striking. The essential factor in all other methods is suggestion and psychoanalysis, which strongly repudiates this, sums up the whole of psychoanalysis. The advantage of the latter method resides in the greater thoroughness and permanence of the results, and in its prophylactic value for the future, the reason

being that it deals not only with the symptoms present at a given date, but with the whole of the repressed mental material that is the basis of all neurotic manifestations, present or future; one does not, therefore, see what is so common with the suggestion treatment, the subsidence of one group of symptoms, followed at some future date by either a recurrence of these or by an outcrop of a fresh series. With the obsessional neurosis, the doubts, impulses, obsessions, and manias that are sometimes included under the name psychasthenia, the psychoanalytic treatment evinces its superiority over the others in a still more marked manner, for these conditions are only slightly susceptible to suggestion. Indeed, the obsessional neurosis, being obviously a purely mental condition, is eminently suitable for the psychoanalytic procedure, and the results obtained would be even more brilliant were it not for the fact that so many patients, not realizing the medico-pathological nature of their condition, do not consult a physician at all until an advanced stage. The various anxiety states also constitute a promising field especially where the morbid anxiety has become elaborated into a complex phobia of a definite object or idea. Of the other conditions I have already spoken, and we may sum up by saying that, although the out look is not equally good in all cases, it is always better if psychoanalysis is resorted to than if any other method is used.

The Patient.

It is evident that in proposing a course of psychoanalysis to any patient, one is demanding from him a serious sacrifice. Not only is the question of time, which we have discussed above, an important consideration, but an attitude of patience and determination is required, and all other business of life has to be made subservient for the time to the treatment itself—for example, in the matter of keeping appointments; further, the cost, though very much lower relatively than in any other field of remedial therapeutics—for instance, surgery—may amount in the course of time to an appreciable outlay. It is well at the very start not to underestimate these considerations, but to make the patient see that the treatment is a serious undertaking, not one to be lightly entered upon; this is not only the obviously honest course to take, but one that has the further advantage of avoiding later disappointment to both the patient and the physician through the former coming to realize that the treatment was a bigger undertaking than he had counted on.

On the other side, have to be reckoned the penalties of a chronic neurosis—for one can never foretell when an apparently mild one, if untreated may not be the forerunner of a more severe form—where the patient's capacity for performing his duties in life and of earning a living is seriously diminished, and where he is doomed to numberless rest-cures, holidays, and health-voyages, not to mention the suffering entailed both on himself and on those around him. On the whole, therefore, the treatment will be found a sound investment from the patient's point of view, and the gain in many cases one for which no sacrifice is too great.

The Physician.

The qualifications needed for psychoanalytic practice are a sound knowledge of neurology and psychiatry, especially on the diagnostic

side, and a sympathetic interest in practical psychology, with the patience, objectivity, and tact that go with this; indeed, no other motive than the latter is likely to lead anyone to take up the work, where the main rewards are the intrinsic interest of it and the satisfaction of being able to alleviate such distressing suffering as is involved in mental disturbance. The methods of acquiring a suitable knowledge of the work are, of course, the same as those applying elsewhere in science with, however, one exception that will presently be noted. The three routes thus are:

A familiarity, through reading, with the work of others; endeavors, at first necessarily tentative and experimental, to apply the method in practice; and most important of all, personal study with some one who has an adequate experience and knowledge of the subject. The last mentioned point is worth insisting on for, on the one hand, the correct technique consists of such a mass of detail that it is almost impossible to include it all in any description and, on the other hand, the range of the subject is so extensive that the learner finds he is constantly wanting to put questions and receive enlightenment on points that may not have been adequately dealt with in the literature accessible to him. These considerations render personal contact with a teacher a well nigh indispensable preliminary to acquiring a suitable knowledge of the subject, and it will then be found that conclusions which may seem improbable and difficult to comprehend in the condensed form in which they are often presented in writing are usually susceptible of being cleared up by a personal explanation. The subject of psychoanalysis deals mainly with the internal friction and conflicts of the mind, and it is held that no mind, however normal, has escaped these. The result is that unless one is able to face freely the buried conflicts in one's own mind—in other words, to have a considerable understanding of one's self—one will continually be the victim of a distorted judgment in the case of others, not seeing tendencies in them that one does not wish to see in one's self, laying too much stress on others for subjective reasons, and so on. On this account it is strongly urged that anyone taking up the practice of psychoanalysis should himself be submitted to an analysis under the same conditions as a patient, and I can cordially endorse this advice from personal experience. The gain achieved is not only that one attains a freer working of one's own mind, with consequently a much greater objectivity towards the mental workings of other people, but also that in this way one learns to appreciate more fully than in any other the difficulties and various reactions experienced by patients. The sacrifices demanded by psychoanalysis are very considerable in the case of both the patient and of the physician, but in the opinion of those competent to judge there can be no question but that the results obtained, which are as brilliant as anything modern medicine can show, more than compensate for them.

"DIVINITY" IN SEMEN.

A Study in the Erotogenetics of Religion.

By

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IN the course of my investigations upon the psychogenetic relationship of sex and religion, I came to interview an ex-clergyman. He had left the pulpit to do independent work as an evangelist. The reason which he assigned for leaving the Baptist Church, after he himself had "experienced religion" and thereby had been regenerated, is that he found the Baptist Church spiritually dead. I told him at some length of my investigation of the erotogenetic interpretation of religious experience, and assured him that any evidence which would tend to prove or disprove that working hypothesis would be welcome.

He promptly informed me that I had almost discovered an important truth. "It is this," he said. "God is life, power. In the semen life is found in its most concentrated form. God consecrated the semen to his own use. To conserve the semen, therefore, fills the body with more life, more power, more God." He was asked if he had anything outside the common experience, something peculiarly his own, to justify so unusual a conclusion? He had, and the proof was "conclusive." His wife at the time of their marriage was a sufferer from an undisclosed epilepsy (psycholepsy, probably). Had he known her condition he might not have married her. She was cured, however, through copulation; that is, through his semen, deposited in her. It was the God in him, that is, it was the God in his semen, that wrought her cure. For me this was a new concept of the relationship of sex and religion. It was also equally new and exceptionally precise information as to the habitat of divinity. In reply to a question, he affirmed that he had never known or heard of anyone else who entertained a similar thought. Without delay I went to accessible libraries to see if I could find any precedents for this unusual theory. I will now report my findings. After that I will suggest some psychologic explanation of the result.

A. E. Crawley.

First, let me report the diffusive A. E. Crawley on: The Idea of the Soul. He says: "There is hardly a part of the body which has not been regarded as the soul, or as its place of location. Hair, skin, nails, bones, *semen*, saliva, and blood, are all so regarded in various races of men." Some time it will be interesting to trace the genesis and development of these varying concepts. Then a question may arise whether or not all of these more specific concepts are not developed from a desire to get at the more ultimate source of life as an existence independent of our conscious thinking or physical organism. It may also be, as elsewhere I have indicated, that this concept of contrasted independent spiritual life and spiritually dead humans, was first suggested

when man became conscious of the activities of the phallus and the resultant phallic worship (1). "There is a natural tendency," says Crawley, "based on experience of growth, to connect form with hardness, shapelessness with softness, and the second pair with inception (generation), the first with completion (death). A simple example is the contrast between the infant and the grown man. In such an idea as the above the point-soul, embryo-soul and haze-soul, the soul in the individual in the state of becoming, just as in the case of the ghost-soul it is the individual in the state of disruption, disintegration" (2). Thus in the disorganization of death man seeks to find the essence of that power through which he hopes in some form or other to attain immortality, and which he first discovered, so as to consciously formulate and worship it, in sex functioning. Speaking of the central Australians, Crawley continues: "The soul, small as a grain of sand is indestructible, like the germ plasm. . . . *The Dayaks suppose the soul to be placed in the embryo. The Bataks regard the spermatozoon as being one of the two guardian spirits of a man.* In Hindu physiology the soul is male, *purusha*. This view, and the corollary that matter is female, are frequent. Swedenborg simply repeats the savage opinion when he says 'the soul, which is spiritual and is the real man, is from the father, while the body, which is natural, and as it were the clothing of the soul, is from the mother.' 'Pattern,' the 'idea' of Plato, the formal cause, is from the father; 'mater,' the *hyle,* the material cause is from the mother. The Sioux held that the father gives the soul, the mother the body (3). According to Manu, in reproduction the father is conceived in the body of the mother by means of the germ-plasm, and is thus reincarnated, reborn, in his child (4). . . . When a man is reincarnated in his own children the doctrine involves the divisibility of the soul."

Here is a myth presenting the same thought of some identity of the semen and divinity. "The semen of Zarathustra is preserved in the ocean. Every thousand years a virgin bathing in the ocean becomes impregnated and then becomes the mother of the savior" (5).

Ancient Hebrews.

We have a further illustration of a religious reverence for the generators of semen, the testes, in the fact that when taking a solemn oath, the patriarchs placed their hand upon the testes in token of the inviolability of their oaths. "When Abraham addressing 'his oldest servant of his house, that ruled over all that he had,' is made to say, 'Put, I pray thee, thy hand under my thigh, and I will make thee swear, by the Lord, the God in Heaven, and the God of the earth that thou shalt not take a wife unto my son, of the daughters of the Canaanites' (6); and when Jacob, at the point of death, 'called his son Joseph, and said unto him, If now I have found grace in thy sight, put, I pray thee, thy hand under my thigh, and deal kindly and truly with me; bury me not, I pray thee, in Egypt'" (7).

Davenport adds: "The Hebrew text has been incorrectly translated in both these instances; for, according to learned commentations, it is not the *thigh*, but the *phallus* that is meant; such tact having, in the opinion of the Rabbins, been introduced for the purpose of doing honor to circumcision" (8).

I interpret the motive for this differently than does Davenport. If the word "thigh" should be translated "phallus," then the hand "under my thigh" means "place your hand upon my scrotum." Now, the probable conscious motive for this instruction is found in a concept of the sacredness of the testes, which because of their essential divinity are to be sworn by in the same fashion as we still appeal to human superstition by asking witnesses to kiss or to place their hand on "the Word of God" in our modern courts.

"A custom greatly resembling this manner of swearing existed also in the north of Europe, as is proved by an ancient law still extant: Thus, one of the articles of the Welsh laws enacted by Hoel the Good, provides that, in cases of rape, if the woman wishes to prosecute the offender, she must, when swearing to the identity of the criminal, lay her right hand upon the relics of the saints and grasp with her left one, the pecant member of the party accused (9). It may be mentioned, *en passant*, that the low Irish in Dublin, and the London costomongers, often make use of an expression which, whether connected or not with the custom above noted, offers for our consideration a curious coincidence at least. If extra force is to accompany an assertion, it is very common for the vulgar to say in conclusion: *"S'elp my taters,'* equal to saying, 'I swear by my member.' That the term 'taters' is a corruption of an (10) vulgarism for 'testes' or *So help me TESTES* —we see very readily in the expression 'strain my taters,' i. e., to pass urine or make water."

Bishop Lavington while discussing the heretics says, the Gnostics "imputed the most horrid pollutions to the Deity, and all the Hosts of Heaven, and declare their own practices after the similitude of celestial copulation" (11). This was probably only a modified intellectualization and spiritualization of sexual perversion, for the pagan gods practiced pederasty (12). From the theory that semen is the habitat of God, to the theory that the soul is something implanted in the semen and the body, is only a difference of words. Underneath these theories the human impulse is the same when life—god—is in the semen; of course, the road to eternal life logically comes through the swallowing of the semen. From the psychogenetic viewpoint we reverse this logical conclusion and say: Those who have a morbid compulsion toward the swallowing of semen will tend to invent moral (see Plato) or religious justifications for their corresponding conduct. Even in our day when religious rationalizations are not so popular as once they were, the excuse of spiritual immortality is reduced to one of securing a moderate longevity, when the impulse toward felatio needs a justification. The late Dr. Mary Walker, the eccentric wearer of masculine attire, found this latter belief so prevalent that she thought it worth while to publish an argument against it (13). But I expect at another time to show how one of the most remarkable women of America expected that immortality in the flesh could be achieved by swallowing the semen.

Among Early Christians.

A similar mode of interpretation helps us to understand some Christian customs. With the Nicholatians "Man's seed and menstrous blood were with them sacred and used by the Gnostics in their divine service" (14). Another author is more specific. He informs us that some

Gnostics "after their libidinous scenes (were said) to offer and administer the 'semen virile' as their sacrament" (15). If we assume a belief that the concentrated essence of God is found in the semen, we have probably the best theoretic justification that such people could be expected to offer. The way to get God is to eat him. Symbolically we still do that in the Christian Eucharist.

The learned Peter Bayle quotes St. Augustine charging similar practices to the sect called Manichees. It seems that St. Augustine himself was an apostate from this sect. Bayle says: "Now because they looked upon their elect as very good purifiers, I mean as persons, who did admirably filter the parts of the divine substance, imprisoned in the aliments, they gave them the principles of generation to eat; and it is said, that they mixed them with the symbols of the Eucharist, a thing so abominable, that the Bishop of Meaux had reason to say, that one dares not think and much less write it. The words of St. Augustine are these (I quote only Bayle's translation): . . . 'Upon which occasion, or rather compelled by an execrable superstition, their elect are obliged to take as it were the sacrament sprinkled with human seed; that from thence also as from other kinds of food which they take, that divine substance may be purged . . . they likewise purge this substance by human seed, as well as by other kinds of seed, which they take in their food. Whence also they are called Purists, that is purgers; purging it so diligently that they abstain not even from this horrid and shameful food'" (16).

Middle Ages.

"Avicenna (980-1037, a distinguished physician and voluminous writer) maintained that the souls of all things living proceeded not from the parents, but from a certain giver of forms, or as Scaliger speaketh, from an intelligence which is the dispenser or, as it were, the steward of forms, which is called Colcodea, and he taught that this celestial mind used the seed as an instrument to produce the vegetative and sensitive souls. . . . He therefore believed that there was a necessity to follow the opinion of some ancient and modern authors, that the soul is in the seed before the organization, and is that which forms that admirable machine which we call a living body. He quotes two fine passages, one from Galen (131-201) and the other out of Titelmanus, which gives a description of the art that is observed in plants and animals." "Sinnertus (1572-1637) fancies that the souls contained in the seed have, each of them in its kind, the faculty, and industry of the organizing matter . . . But although Galen despaired of ever finding the cause of all these things, and confesseth that he could not, in this matter, discover even a probability, for which he was exceedingly grieved, notwithstanding if he had considered that these operations are proper to the soul of every species, he might, without such difficulty, have perceived that these operations proceed from the soul which lies concealed in the seed" (17).

Whether we call it "soul," the immortal essence that unites us to God, or call it God in the sense of some Pantheists, as did my first pastor, seems to be a difference of label without much essential difference of function, or of concept. In either case the super-human and super-physical is pre-eminently to be found in the semen.

Dr. Walter Charlton.

My search also led me to Walter Charlton's "Natural History of the Passions" (1674). This author (1619-1707) was a physician and "one of the most learned men of his century." He published twenty-nine volumes. He was a high churchman, a royalist and was celebrated in an epistle by Dryden (18). Dr. Charlton's exposition of the essence of divinity, the creative soul, as resident in the semen, and his discussion of the soul, sheds light also on the age old theory of a trinity (variously described) within each individual, namely: The mortal body, the immortal soul (in semen or in the autonomic system) and the spirit (as conscious psyche or lesser soul). With so much as indicating my valuation of his views I proceed to quote his otherwise tedious discussion, so that others may interpret it for themselves.

Charlton says that the Manichees held there were "two souls in every individual man; one polluted with the stain of vices, and derived from an evil principle, the other incontaminate, and proceeding immediately from God, *yea, more, a particle of the divine essence itself;* then the Platonics also, Averrhoists, teaching that the rational soul is not man's forma informans, but part of the anima mundi or universal souls" (19). Of the Manichees something has already been said hereinabove. Again. he says: "When the more agile, and *spiritous particles of the seminal* matter, having freed themselves from the other parts of it, quickly assembles together, and by little and little raising a commotion, stir up, and agitate the *grosser matter*, and by degrees dispose them into fit postures and places, where they ought to remain and cohere; and so form the body according to the figure or shape pre-ordained by the Creator. Meanwhile this congregation of subtle and active particles of the soul (in semen) which by expansion enlargeth itself, and *insinuating her particles among others more gross*, and as it were interweaving them, frames the body, is itself exactly conformed to the figure and dimensions of the same body, co-extended and adapted to it, as to form a case or sheath, doth actuate, enliven and inspire all and all parts thereof (20). . . . From whence it seems, a genuine consequence that that essence or being of a sensitive soul hath its beginning wholly from life, as from assension or kindling of a certain subtle and inflammable matter. To render this yet more plain; when in the *Genital matter, swarms of active, and spiritous, chiefly sulphurous particles, predisposed to animation*, have met with less number of saline particles in a convenient focus, being as it were *kindled, sometimes by another soul* (as in all vivaparous animals), viz., of the generant, sometimes by their own rapid motions (as it happens in *oviparous*) they conceive life, or break forth into a kind of flame, which thenceforth continues to burn so long as it is constantly fed with sulphurous fewel from within, and nitrous from without (21) . . . The duration of the body depends entirely upon the substance, or perpetual renovation or regeneration of the soul, and how immediately upon the soul's extinction the body submits to corruption (22) . . . That the corporeal soul, while as a flame burning within her organical body she on every side diffuseth heat and light, is herself, subject to serious tremblings, noddings, eclipses, inequalities and disorderly commotions, as all flame is observed to be (23) . . .

"She (the rational soul as distinguished from the other soul) is

created immediately by God, and infused into the body of a human embryon, so soon as that is organized, formed and prepared to receive her (24) . . . These motions or acts being thus traduced from the superior to the inferior soul and thence derived first to the brain and imagination, then to the heart, produce therein and so in the blood, the various motions that constitute such passions as we observe in ourselves, when we are most ardently urged to acts of devotion and piety, toward the supreme being. Whence it is doubtless that Divine Love, detestation of sin, repentance, hope of salvation, fear of incensing Divine justice and most if not all other acts (or passions) of devotion are commonly ascribed to the heart" (25).

Charlton also gives us some notion of his concept of the progress from the divine soul through the lesser soul (spirit or psyche) into an idea of a human being and thence to the creation of a new being. He tells us that with maturing there is a surplus of "animal spirits" or soul-stuff "and the luxurient or superfluous troops of them, together with a certain refined and generous humor derived from the whole body, are daily transferred to the genitals here to be further prepared and formed into the *idea* of an animal exactly like the first generant which afterwards is in the male and female transmitted into the womb." This may also be a justification for the ancient notion that man furnished the soul, and woman the body of a babe. Here, too, we see the mystic view of the relative omnipotence of the idea in creation. The idea is symbolized by the word, and the word was made "flesh" is The Apostle John's way of expressing it.

Mr. C. W. S.

Next I came upon an unorthodox living mystic who had repudiated all Christianity, and seemingly, at least, was endeavoring to revise, rationalize and harmonize such modern cults as Christian Science and New Thought. He produced a slight modification of the divine-semen cult. With him the essential life-giving power rested in the secretions of the prostate gland. This gland he called "Kardia" and the secretions he called "Chri," doubtless from "Chrism." He claims to have studied the original Greek Bible-text and so had learned that: "Christ is not Jesus and Jesus is not Christ. Christ stands for oil or applied oil. The latter is twisted by theology into 'anointed' or oiling material. . . . It is an actual physical process."

He argues from a book on physiology that an effective union of the sperm and ovum cannot take place without the "Chri." Therefore. he selects it as the very essence of life—"the elixir of life." By its cultivation and use all diseases can be cured through the consequent divinity in the cultivator and conservor. Even immortality in the flesh is to be so attained.

The loss of semen is of no consequence, but the loss of "Chri" means death, for without "Chri" there can be no consciousness. Therefore, he developed an elaborate technique for softening the gland, for consciously controlling its activities and for increasing and conserving its "Chri." In women the glands of Bartholin serve the corresponding function. The period of acquiring this technique is about two years and it is achieved largely through breathing processes coordinating a "breathing" of the lungs and of the "Kardia" or prostate gland. This is the true regeneration, the door to physical immortality. On his views upon this

subject I may write more when I come to making a study of the psychology of belief in spiritual regeneration and the psychology of belief in immortality.

One of his pupils tells of a case wherein felatio and swallowing of the semen was used by a wife. She is said to have become so saturated with "Chri" that some of it began to ooze from her breasts. This pure "Chri" could then be administered to others for the cure of disease and to give them a pure strain of high-quality "Chri" as the basis for the further development of their own spiritual capacities. Powers thus to be developed are clairvoyance, clairaudiance, astrol projections and attractions, etc., etc. That C. W. S. had some glimmer of physical facts as the basis of his metaphysical superstructure we might cite the views of Brown-Sequard who found that sexual excitement increased capacity for physical and mental work (13).

These beliefs, in fact every belief, may be viewed as a striving toward the satisfying of an impulse. When we have become sufficiently conscious of our impulses, we invent formulas to proclaim, theories to justify, theologies to explain our dominant urges. Where this striving, however subconsciously conditioned, produces obviously conscious conduct we must infer that this conduct also expresses either literally or symbolically, some intellectualization, explanation, justification and rationalization of the underlying impulses. Therefore, we can, from obvious conduct, the accompanying choice of its verbalisms and the quality and intensity of feeling that goes with it, often make a fairly accurate and sometimes an obvious inference as to a subconscious or concealed impulse that is at work. By applying this method to the foregoing facts we can readily see two things. The above facts and their religious and metaphysical theories, suggest the inference that they were influenced by an impulse toward felatio, mingled perhaps with a symbolic sadocannibalism. We know also that such impulses in adults are quite uniformly accompanied by emotional consciousness of guilt and feeling of inferiority. From this feeling comes a tendency to attain a justification for a compensatory claim of superiority. When we fail to achieve adequate consciousness of power through the successful manipulation of our environment we easily resort to a phantasmal intimacy with something superhuman. By such processes could come a predisposition for the apotheosis of semen, and a religious justification for swallowing it.

This brings us to the second inference to be made from the nature of this sacrament. What is more likely than that it symbolized the intellectualization of an impulse toward felatio and afforded a compensatory, delusional religious grandeur, by means of the theory that in swallowing the semen these devotees were accumulating within themselves more of the essence of divinity? I know a case where a most extraordinary woman claimed to have attained bodily, physical immortality by swallowing semen. Such a Eucharist, like the retention of semen through abstinence, tends to promote or to explain states of psychosexual ecstacy which are very commonly interpreted as an experience of God. In fact, all this is but a psycho-genetic elaboration of what St. Augustine has told us above. Such theorizing about sex produces the notion of a war between the spirit and the flesh, between psychic erotism and physical erotism. It also brought into being the ancient phallic worship as well as modern kindred Puritan theories about the sacred-

ness of sex, and the apotheosis of psycho-erotic ecstacy, especially when it is recognized to be sexual (26). Excessive sex-stimulation, either by repression or by excessive indulgence, always produces sexual hyperaestheticism with a tendency toward a purely psychic erotism, which is easily misinterpreted as the operations of or an experience of the indwelling divinity. So, then, if this tendency is not excessively strong, it leaves us content with a mere *symbolism* of some life-giving—life-embodying—God, one to be swallowed in the Eucharist and whose divine presence is evidenced in the hyperaesthetic ones, by subjective experiences of divine (psycho-sexual) ecstacy, accepted as being conclusive proof of an actual divine influence in us and in the universe. Such persons at such times have the consciousness of an indwelling God, of themselves being God, at least in the sense of a mystical pantheism.

When we are over-conscious of our inadequacy for dealing with life's problems, we are the more easily impelled to look for superhuman help to supply our need, by giving to us more of the divine omnipotence. This excessive emotional inferiority and dependence is the essence of the religious predisposition. Others who are of different temperament, rather seek more of human wisdom than for super-human help or compensatory superhuman affiliation. The very religious ones tend to look for fluctuations in the consciousness of life as evidence of different measure of omnipotent co-operation. The worldly-minded see in the variations of human energy chiefly a problem of the emotions, or the circulation or of metabolism. If we are impelled to think that God is life, or the author of life, this seems to me to imply an antecedent extravagant valuation of the life-giving function, which valuation of life over death is in many persons the product of a morbid emotionalism over sex. This same condition operating with less intensity impels many others to believe that somehow sexual organs and relations are more sacred than those of digestion. More healthy minded and intelligent persons make no such relative appraisals between parts of an inseparable and interdependent organism.

Phallic worship emphasized this importance as belonging to the physical manifestations in the external organs of generation, chiefly the more obvious male organ. With more exact and more detailed acquaintance with the generating process humans may locate the creating divinity in the testes or the semen. Some with emotional conflicts about their own erotism, and therefore ashamed to be concrete, express a similar state of mind by more general language, simply implying the sacredness of sex, generally and vaguely expressed. Because for them sex has a morbid over-valuation these are compelled to insist upon imposing absolutistic moral codes. So have come compulsory polygamy, promiscuity, monogamy, and abstinence, all enforced as the will of God. In others the same shame and over-valued sex importance may be accompanied by a sex-fear and sex-shame requires corresponding need for phantasmal yet compensatory exaltation. If in such persons there is a more thorough emotional identification with the females of the race, through the erotomania, will be tempted to apotheosize the purely biologic function of motherhood. So we come always back to the erotogenetic interpretation of religious experience, religious valuations, and moral codes of superhuman origin.

BIBLIOGRAPHY.

(1) Erotogenesis of Religion. ALIENIST AND NEUROLOGIST, 28:330-341, Aug., 1907. Translated in *Zeitschrift für Religionspsychologie*, 1:445-455. See also my Revivals, Sex and the Holy Ghost. *Jour. Abnormal Psychology*, 14:34-47, Apr.-July, 1919.

(2) Crawley, A. E.: Page 22.

(3) Crawley, A. E.: Idea of the Soul, pp. 234-5.

(4) Crawley, A. E.: Idea of the Soul, p. 233; citing Laws of Manu, p. 329.

(5) *Psychoanalytic Review*, v. 7 (No. 1), p. 99, Jan., 1920.

(6) Genesis, chap. XXIV, v. 2, 3.

(7) Genesis, chap. XLVII, v. 29.

(8) Davenport, John: APHRODISIACS AND ANTI-APHRODISIACS: Three Essays on the Powers of Reproduction, pp. 6-7, 1869. Privately printed.

(9) The Latin text of the law is as follows: "Si mulier stuprata lege cum illo agere velit, memgro virili *sinistra prebenso et dextra reliquos sanctorum imposita, juret super illas quod is per vim se, isto membro vitiaverit.*" Voyage dans le Departement du Finisterre, Tom. iii., p. 233.

(10) Davenport, John: APHRODISIACS AND ANTI-APHRODISIACS: Three Essays on the Powers of Reproduction, pp. 8-9, 1869. Privately printed.

(11) Lavington on Moravians, 117-118.

(12) Peter Bayle's Historical and Critical Dict., 2:482.

(13) Comtes rendus de la Societe de Biologie, 1889, p. 420. See Prolongation of Life, pp. 277-8, by P. C. Mitchell.

(14) Ross, Alexander: View of All Religion, 188, 185. See also Madden: Phantasmatta, 1:83.

(15) On the Worship of the Generative Organs. Citing: Praedestinati adversus Haeres, lib. Ic. 46.

(16) Bayle, Peter: Historical and Critical Dictionary, 4:91, 2nd Edit. note.

(17) Bayle's Hist. and Critical Dict., 2nd Ed., 5:114.

(18) Stephen's Dictionary of National Biography, v. 10, pp. 116-118.

(19) Preface, p. 22, Charlton, Walter: Natural History of the Passions, Savoy, London, Covent Garden, 1674.

(20) Page 12: Here we have a rather detailed account of what may be believed as the process by which God created man in his own image.

(21) Page 15.

(22) Page 20.

(23) Page 24.

(24) Page 60: Des Cartes gave God a habitat in the pineal gland.

(25) Charlton, Walter: Natural History of the Passions, Savoy, London, Covent Garden, 1674 (p. 78).

(26) See my Revivals, Sex and the Holy Ghost. *Jour. of Abnormal Psychology*, 14:34-47, 1919.

EDITORIALS.

Conducted by

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LIMITATIONS OF PSYCHANALYTIC THERAPY.

It has been repeatedly pointed out that psychanalytic therapy has a tendency to ignore the factors of the etiologic moment. Hitherto, with the exceptions of Adler and Puig, who have been fiercely denounced by Freud for their departure from Freudian orthodoxy, psychanalysts have devoted attention only to the "intellectual submarine." Brill,* the foremost American apostle of Freud, has lately accomplished a complete somersault in this particular. In a recent article he remarks that psychanalysis does not lend itself to the amelioration of acute neuroses.

It was as impotent in shell shock as it would be in hernia. While this opinion is more logical than most views as to psychanalytic therapy, still it takes into account only the primary cause, and ignores the fact so often shown in confusional states that the primary cause, mental or otherwise, disappears, leaving a protracted effect.

The patients selected for psychanalysis should, according to Brill, not only be of normal intelligence and of good character, but they must have recovered from acute attacks.

The chronic psychoneurotics of normal mentality gave the best results. Most of these people showed some sexual difficulty. Brill found that 60 per cent. of the persons referred to him were so referred because the patient spoke of sex to his physician, or his physicians suspected a sex element. The sex impulse consisted of many elements which were congenial and developed with the individual. No neurosis, even in a child, was possible, in a normal sexual life. Many patients sent to psychanalysts could have been cured without psychanalysis had the family physician known something of psychosexuad disturbances. Many physicians dealing with nervous patients need to cultivate a better rapport similar to that cultivated by psychanalysts and designated transference. The mechanism of transference was put in operation by the patient continually applying to the physician hostile or tender emotions which had no foundation in the actual relation but were derived from the patient's unconscious fancies. The transference had to be managed with a great deal of tact and skill, for there was a tendency in neurotics with a floating libido to be ever ready to fix it on some one, identifying that person with the good father who spoiled them or with the lost lover, etc., which was absolutely impossible in the relationship existing between patient and physician.

The same mechanism was constantly found in normal life and upon it was based attraction or repulsion. One danger of transference is not pointed out by Brill, although it is often the source of forensic consequences. The hysteric accusation often originates in the dream of a hysteric instability and is transferred in the waking state to an unfortunate victim. In more than one case civil or criminal accusations have followed from a hysteric sex dream through its evolution in the waking

state. The pseudologia phantastica erotica is a frequent phase of this. Another danger is the substitution of a Freudian nosophobia for a neuropathic nosophobia. The same class of instabilities who used to seek gynecologic and surgical titillation are now seeking Freudian titillation through logorrhoeic dream details, eagerly inquiring if factors of ordinary life have not a Freudian sex symbolism.

Brill and H. W. Frink warn against sending patients to non-medical psychanalysts. The same warning would apply to unethical medical charlatans.

According to Frink,* this practice was getting to be a menace and if more of it went on, the high repute of serious psychanalysis would be in jeopardy. Psychanalysis was not Eddyism and the attitude toward it should not be that accorded Eddyism.

SOME SEX CASES.

L. E. Duval (*Medical Record*) narrates some sex cases coming under his observation at St. Elizabeth's Hospital in Washington, which belong to the so-called "borderline" cases of criminality. Two characteristics which the author has observed among these borderline cases is the tendency to assume the role of martyr in all unpleasant circumstances, and a tendency to assume a self-sufficient air which is plainly a compensatory reaction. From the legal standpoint we are often at a loss to say whether the patient is responsible for his crimes or not.

Case I. N. W., age 39, a chemist, was sent in as a Federal prisoner while serving a sentence of fifteen years for white slavery. He comes from heavily tainted stock. His father, 73 years old, has a violent temper and is insanely jealous of his mother. The father is suffering from senile dementia. A brother and a sister are insane. One brother is alcoholic. Mentally the patient has always been above the average and did well in school and in college, specializing in chemistry. Unfortunate influences were present in his life at an early age. From his fifth to his thirteenth year a man-servant in the family used the boy as a sexual object and he was kept in constant fear of this man. These experiences naturally left their mark on the mind of the growing boy. He masturbated from his ninth to his eighteenth year. Normal sexual intercourse began at the age of fifteen, in a house of ill-fame. According to the patient he is strongly heterosexual although observation of him has convinced those who have observed him that he is homosexual and that his unrecognized homosexuality has played a large part in his mental life. During his college life he sustained a severe head injury and later two other injuries to the skull and lays great stress on the belief that all his misdemeanors and the course of his life were directly due to these injuries.

His family life has been far from happy. He had a strong attachment for his mother and was her favorite child. Since leaving college the patient has led a wandering life, though never a tramp, for he has always been able to obtain remunerative employment. During attacks of amnesia he would wander all over the United States, Alaska and even Siberia. He would come to himself far from home and be able to ac-

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count for himself. He has also been subject to epileptiform attacks (hysterical in nature) which practically always occur when in some painful situation.

In 1904 the patient married a Catholic girl by a civil ceremony and refused to accede to her parents' wishes to be married by a priest. They lived together only four months. His accounts of why they separated are contradictory, but it seems that the patient's latent homosexuality had much to do with it. He refuses to recognize this homosexual element and professes extreme disgust for anything except normal sexual intercourse and tries to give the impression that he has led an extremely active heterosexual life (a common reaction in homosexuals).

Previous to the episode which led to his arrest the patient came home from Alaska to make what he believed his last visit to his aged mother, who he did not think would live long. He no sooner reached his parents' home than the old conflicts with the father and brother were renewed. The father caused the brother to accuse the patient of having been too intimate with the mother and said that he had seen the two in a compromising position. (This incident has been partly corroborated by the family.) The patient was so angry at the charge that he obtained a knife with the deliberate intention of killing his brother, but a convulsion conveniently interfered and when he recovered it was too late to carry out his plan. He obtained all the money he could, several thousand dollars, and started for Alaska, but only reached a nearby city, where he lost all his money, clothes and baggage in some mysterious manner. He borrowed from a sister and started again. In San Francisco he became very ill for several weeks and when he recovered and while traveling in the middle west he became involved in his present difficulties. While in a small town he one night picked up a woman on the street, believing her a common prostitute. He was under the influence of liquor at the time. They spent a night at a hotel and while he was asleep the woman searched his pockets and obtained the address to which he was going. Shortly after arriving there he received a letter from the woman stating that she was pregnant and asking his advice and help. He made a trip to see her and found that she had lied. The upshot of the matter was, however, that he allowed her to travel about with him for a time, though trying to bribe her to leave him. During their stay in a mid-western city they became acquainted with a young waitress in a restaurant. Here the sequence of events is not clear, but the waitress went with them when they left the city. The girl's mother and sweetheart followed them and caused the arrest of the patient and his companion on the charge of seduction. This charge failed, also a charge for statutory rape. He was then charged with violation of the Mann act. His brother appeared as a witness for the prosecution and swore that the patient was a sexual degenerate. The patient's companion turned state's evidence and testified that he had hypnotized her so that she was powerless to resist him and that he had performed homosexual acts. It was definitely proven that he had committed one of the most flagrant white slave crimes since the law went into effect.

Case II. F. C., age 23, was arrested in a public park, having been detected in a perverted sexual assault on a little girl. In order to escape the disgrace and publicity of a public trial his brother managed to have

him committed to the institution. The patient's birth, infancy and childhood were apparently uneventful. He received a moderately good education and had no difficulty with his studies. His initiation into sex knowledge was obtained from other boys when he was about fourteen years old. He avers that he was told about normal intercourse but not about any perversions. When he was seventeen years old, in company with some other boys, he visited a house of ill-repute. It was his first contact with women in a sexual way. To the surprise of the woman he began to perform cunnilingus. Believing that the patient was ignorant the woman tried to show him how to perform normal intercourse, but he told her that he had no desire for it. The perversion seemed to be instinctive. He claims never to have been told about any sex perversion and claims never to have had any experiences which would lead him to perform cunnilingus. At intervals of about a month he has marked sexual desire, accompanied by a feeling of heaviness in the head. This feeling is relieved if he can perform the perversion. When he cannot find a woman to whom to practice cunnilingus he often obtains sexual pleasure by contact with a woman's undergarments to his mouth. On one occasion he sent a letter to a merchant telling him to hang his daughter's undergarments in front of his house or his store would be burned. He was apprehended, explaining his perversion to the chief of police, and was put on probation. Realizing the abnormal nature of his sexual instincts, he has on a few occasions attempted to perform normal intercourse, but he has never been able to accomplish the act.

He does not care for the company of the opposite sex and never had a sweetheart. He is rather seclusive, preferring to spend his time reading. In his day dreams, he likes to picture himself normal sexually and as a married man with children. He is rather fond of children, but would prefer to have them without a wife, if possible. He cannot bring himself to care for women except as objects of indulgence of his perversions. Mentally, the patient is of average intelligence and has shown nothing which could be interpreted as belonging to a mental disturbance.

Case III. A. R., a soldier, was arrested on a charge of sodomy and sentenced to two and one-half years in prison. While serving his sentence he became hysterical, had wandering delusions and openly proposed homosexual acts to the attendants. His family history is negative. He began schooling at the age of four with home instruction, and attended public school from his seventh to his eleventh year. He then was taught by private tutors until his eighteenth year, studying a varied program of science, theology, philosophy, etc. He then felt a desire to start out for himself in the world, notwithstanding that he was a dreamer, impractical, whose chief object in life was reading and study. He did not care for the games and sports of his companions, but preferred to read or play the piano.

When the subject of his sexual life was broached the patient launched into a long argument, the burden of which was that he is strongly heterosexual and has no homosexual tendencies. He proved to his own satisfaction that he had been a gay Lothario. He boasted of having lived with a girl for three years. He understands the subject of sexual perversion in a superficial way. In appearance he is effeminate. The features are feminine and the hair, parted in the center, accentuates

this. He uses feminine expressions, such as "Goodness me," "My gracious goodness," etc. His gestures are also effeminate and so marked is this characteristic that some of the patients have remarked about it and have called him "a disgusting degenerate." According to his story there was no ground for the charge upon which he was convicted.

J. G. K.

SEX REPRESSION AS A CAUSE OF INSANITY AND GENIUS.

"In order to understand insanity fully it is," remarks Philip R. Lehrman,* "only necessary to bear in mind that no experience in life, from infancy on, is ever obliterated. It is repressed. From our earliest days we are taught to curb our desires, and the same is true in our love life. The child's love has a very definite direction, and contrary to the usual way of thinking it has certain sexual characteristics. In early infancy the child's sexual feelings have reference to its own body; it is onanistic; next it is transferred to some one like himself and therefore of the same sex (homosexual stage), and finally it begins to transfer his love to the opposite sex—the first one he encounters is his mother or one taking her place—and lastly ends in the true heterosexual stage. In all these stages of its psychosexual development, fixations may occur, and all perversions are but manifestations of these fixations. The psychosexual development of the race corresponds to that of the child, and among the primitive races we see Hellenic homosexuality, pederasty and sadism as institutions, which in the present day and in adult life would be considered antisocial. The tendencies remain, however, and three ways of deflection are possible, first perversions, second sublimation (as in the normal—thus an artist makes use of his exhibitions—*voyeur* complex, or a politician of his homosexual tendency) and finally a psychosis or neurosis where the infantile and primitive cravings are symbolically fulfilled. We see then that it is not far from the truth to say that insanity borders on genius. The same impelling force may cause either. The two are frequently combined. The mediocre man is the one who develops through the stages with but repressed memories but no fixations. He is, therefore, neither a genius nor a lunatic."

What Conrod Aiken, the poet of psychanalysis, thought was a joke: "Dam up your libido; be a poet," is a serious notion to the Freudian. The mediocre man is fortunate in being able to "repress sex memories without fixation," since he thereby escapes lunacy and also according to Lehrman, genius.

J. G. K.

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SELECTIONS.

CLINICAL NEUROLOGY

LETHARGIC ENCEPHALITIS.—L. J. O. Sirois, *Le Bulletin Medical de Quebec,* March, 1920, reports the case of a boy of eighteen years, tall and extraordinarily well developed for his age. He had nine brothers and sisters, all of them in excellent health. The patient had a very benign attack of grippe about the middle of October, 1918, which kept him in bed for two or three days, though confined to his room for one week. He returned to work feeling as well as before his illness.

He worked on a farm until last November when he went to work in the mines and, as was the case with all the miners, was put to work day and night shift, alternately. As previous to his work in the mines he had lived a very regular life, he found it possible to sleep very little during the day when his duties kept him up at night. This irregularity seemed to disturb his digestion. He complained of feeling sick on the twenty-second of last January. Awakened, after a bad night, with fever and chill and had intense cephalalgia. He consulted a doctor immediately and, after getting a prescription, returned home and took a purgative. Had profuse sweats. Remained in bed the next day. Cephalalgia had not lessened but he experienced a most irresistible desire to sleep. As he explained, it seemed as if he had two great weights on his eyes. He continued in this somnolent condition until the twenty-seventh when the author saw him for the first time. Patient was doubled up in the bed with his eyes closed and apparently sleeping quietly. In response to a question, without seeming to waken, he responded consciously and intelligently, speaking in a low tone. Temperature, 103; pulse, 96; respiration, 24. Complained of frontal and very severe occipital headache. No contracture or pain in the nape of his neck. Abundant saliva. Cheeks puffed out. Incapable of opening his eyes beyond a mere slit. Had ptosis of the lids; injected conjunctivae; pupils dilated, very sensitive to the light. Found neither strabismus or diplopia. Complained of intermittent ringing in his ears. Found nothing abnormal with heart or lungs. Slight rigidity of the articulation of the knees, reflex seemed normal. Neither Kernig's nor Babinski's signs. Tactile sense normal. He ate well, taking everything that was offered him. He had two spells of mucous vomiting daily. Bowels acted twice daily, due to purgatives. Amount of urine voided was small. Micturition not painful. No albumen in urine. He remained in this condition for two days except for occasional spells of excitement. On the morning of the thirtieth he wished to sit up in bed and found his limbs were rigid. A few minutes later fell over in a coma and died towards mid-day.

The three symptoms which seemed most marked were fever, somnolence and paralysis of the muscles of the eye.

Ecomomo (Vienna) 1917, Netter (France) and Benson (United States) in 1918, were the first to call attention to this mysterious disease, even though they were unable to throw light on the question of its etiology, pathology or therapy, they nevertheless were able to familiarize the profession with the symptomatology of the affection. Since

this time there have been many small epidemics in France, England and the United States, giving abundant opportunity to study this problem, without, however, finding a solution.

In England there was a mortality of 22 to 35 per cent., in Winnipeg of 38 per cent. Boyd observed sixty cases in the Winnipeg General Hospital since the month of October and his conclusions corroborate in every point those of the French and English physicians. Of these cases eighteen went to autopsy in which were found the following anatomical lesions:

Intense congestion, diffuse inflammation, hemorrhagic points, perivascular leucocytic infiltration. The mesocephalon was always the part of the brain most severely affected. Bacteriologic examination and cultures from the blood and cerebrospinal fluid injected into rabbits gave no results.

Syphilis and Parasyphilis of the Central Nervous System.—M. Neustaedter (*Medical Record*) points out that syphilis of the nervous system manifests itself as the tertiary type in (1) vascular involvement, (2) gummatous exudates in the meninges, (3) gummatous deposits in the substance of the brain or cord, and (4) the so-called parasyphilitic affections.

1. The vessels may suffer through the mechanical pressure exerted upon them by the syphilitic deposits of the meninges or nerve tissues surrounding them, giving rise to an obliterating endarteritis. The syphilitic inflammatory process may involve the vessels through contiguity, involving the outer coats first, and give rise to a peri-arteritis and later to a mesoarteritis and a panarteritis. And finally the vessels may become diseased as a result of the direct influence of the syphilitic virus by its irritation of the vessel walls and the consequent inflammatory reaction. The endothelial cells proliferate first. The vasa vasorum become inflamed and a proliferation of the connective tissue cells in the adventitia, followed by deposits of round cells into the new formation of the intima. The proliferation of the intima may continue until the lumen of the vessel is partially or totally occluded. This form of vascular change is most commonly met with. Partial or total occlusion may also be brought about by thrombosis. As a result of this obliteration we have a complete or partial absence of nutrition of the parts supplied and there ensue necrosis and softening.

2. The meninges of the brain and cord are more frequently involved than the vessels. The contiguous parts may or may not be affected in the process. This is due to the lymphatic and vascular richness of the leptomeninges. The syphilitic virus and toxin find their way into them through the circumambient fluids. The gummatous, gelatinous exudate deposited here frequently involves the contiguous dura which becomes adherent to the soft meninges, forming one thick covering. The underlying nerve substance may become affected in the same way and give rise to a meningomyelitis or meningoencephalitis, as the case may be.

3. Gummatous deposits into the brain and cord substance are as a rule a constant accompaniment of a specific meningitis. But there are cases on record where the syphilitic process affected these parts primarily. The progress is rather slow and insiduous and for this reason

this affection of the central nervous system can be termed meningomyelitis or meningoencephalitis, as the case may be.

In the case of the spinal syphilitic affection the process is not equally distributed, for at one time the posterior and at another time the lateral aspects are predominantly involved. It is only late in the disease that the entire circumference is affected and then we find the cord completely enveloped in the thickened membranes. The myelitic process is less extensive than the meningeal. Even in cases where the entire cord is affected we find only disconnected and widely disseminated foci.

4. The parasyphilitic affections of the central nervous system are those which yield the symptom-complex of tabes, tabo-paresis and paralytic dementia. There is a general similarity in the lesions of general paralysis and tabes and other syphilitic lesions: namely, there is an endothelial and conjunctival hyperplasia, with a tendency to fibrous and sclerous formation. In tabes and paresis there is also the primary neuronic decay which we cannot readily account for solely by the changes in the supporting, inclosing and nutrient tissues, as we can in syphilitic lesions.

Noguchi and Moore and later, also, other investigators, have demonstrated the presence of the treponema pallidum in the tissues of the central nervous system in the parasyphilitic affections, and the Wassermann reaction is positive in all cases in the cerebrospinal fluid and the blood serum. While the blood in cerebrospinal syphilis, as a rule, gives a positive Wassermann, the spinal fluid is not always positive. The reason for this is that the globulin present in the blood cannot pass through the cerebrospinal vessels which are affected by an endarteritis and periarteritis into the cerebrospinal fluid. In the parasyphilitic affections, however, the globulin necessary for the Wassermann reaction comes from the degenerated neurons of the cerebrospinal axis.—*Urologic and Cutaneous Review.*

Five Cases of Neurosyphilis Illustrating Special Points in Symptomatology and Course.—Abraham Myerson in the *Boston Medical and Surgical Journal* reports five cases which represent somewhat unusual and yet rather important phases of neurosyphilis. The first case deserves attention because it points out the importance of the spinal puncture. It is very well known that the spinal fluid may be positive to the Wassermann test for syphilis where the blood is negative. But in this particular case, the blood remained negative during many examinations while the spinal fluid was constantly positive. The second case is noteworthy because the Brown-Sequard syndrome appeared in almost classic purity. Moreover, the spinal fluid showed the xanthochromia syndrome. The third case is one in which a mental disease apart from the neurosyphilis manifested itself almost as though the neurosyphilis were not present, while the neurosyphilis itself gave practically no symptoms. The fourth and fifth cases are important because they affect a brother and a sister. The brother, a paretic, clinically, was treated and had a fine remission of clinical symptoms, but the spinal fluid was unchanged. The sister, presenting none of the signs of paresis, was treated for a long time for orthopedic symptoms. She presented in her spinal fluid the syndrome of paresis. Altogether, these cases form a group which, though each is individual and unusual, is char-

acteristic of neurosyphilis in the wide range of symptoms presented.—*American Journal of Syphilis.*

THE MILITARY PROGNOSIS OF SOME NEURO-PSYCHIATRIC AFFECTIONS.—Tom Williams, *Military Surgeon*, February, 1920, writes that in every appreciation as to an individual's military capacity there is the possibility of a prognostic error, for a man who appears to be recuperated may not really be capable of withstanding conditions at the front. The number of cured cases however which have done so is very great.

Where unfitness for military duty is a question greater certitude can be reached. Experience has shown that *men who have been trephined* can rarely stand fire. This is so even in men with a normal cerebrospinal fluid and without headaches. It is very seldom that a man whose dura mater has been penetrated has been free of hyperemotivity, excessive fatiguability and cardiac instability. The reactions of these men are also slowed, as measurements demonstrate.

When *commotion without wound* has occurred, men may be fit for the front provided that they are free of headache, faintness, dizziness, and when their emotional, labyrinthine and spinal fluid reactions are not abnormal.

Meningeal inflammation need not permanently unfit a soldier for duty. Even persistence of lymphocytosis and increase of albumen in the spinal fluid need not prevent a man returning to duty provided he has no neurological symptom and his general condition is good. This is particularly true where syphilis is concerned.

In *intoxication of the Cerebrum*, showing itself as mental confusion, a good prognosis can usually be affirmed. A man can return to duty as soon as he is sleeping well and shows no slowing of reactions more especially in his social relationships. Besides this the reliability of the memory must be assured in the case of an officer.

An *attack of melancholia* need not prevent a man from returning to the front as soon as his weight recovers and social activity is resumed. The same is true of maniacal hypermotivity.

Very differently must be envisaged the *emotionalism*, the *consequence of fatigue*, endocrine irregularities and prolonged strain. The recovery of these cases is not only prolonged, but uncertain; as there are often profound bodily changes, more especially in the endocrine system, showing themselves as vasomotor dystaxia, tachycardia, disturbance of the oculocardiac reflex, abnormal reactions to hot or cold applications and to the injection of endocrine and other re-agents, and obstinate disturbances of the secretions. Some men, in spite of these physical reactions, can dominate their emotions so as to appear brave at the front again, but even these men must break down before long because of the great strain entailed. Thus, it is undesirable to return to the front a hyperemotive with marked changes in physical reactions.

On the contrary when *emotionalism is purely psychogenetic* it can be removed psychotherapeutically even when it is of long standing.

The pseudo-emotionalism shown by some hysterics must be distinguished from the foregoing.

Hysteria must be rigidly differentiated from asthenia, in which the evidences of fatigue are revealed by low blood pressure, chilly extremi-

ties, poorly reacting heart, glandular insufficiencies, against which the best psychotherapy is of course thrown away.

Psychoprophylaxis against harmful suggestions must not be omitted however, but even here opotherapy, generous feeding and rest outrank syllogisms. Most fatigued men recover completely, although a minority are less able than before to withstand hardship.

Motor or sensory hysteria without marked emotionalism is still more readily curable and every case should be available for the front if precaution against fresh suggestion and relapse are properly taken *en route*, and especially at the regimental depot. This is especially required when there is a tendency towards exaggeration or malingering.

Sinistrosis must not be confounded with hysteria. It consists of the state of mind which, believing itself aggrieved, imperiously demands redress from society, this being in military life, the army authorities or the nation. It occurs more especially in men who have been wounded, but it may occur in the case of ill health without wound and even when the ill health is purely imaginary or the wound trifling. In civil life demand for indemnity is the most usual manifestation. In war time, this is complicated by the desire to avoid returning to the front.

Theoretically *sinistrosis should be curable* like every psychogenetic state. Practically it is regarded as incurable, so obstinately do these men hold their claims. This pessimistic prognosis is unjustifiable, if we envisage adequately the data of modern psychotherapy, and if we are prepared to utilize our ingenuity in modifying the emotivation of these patients in a constructive fashion. There are indications of the success of methods in which this principle has been utilized in a broad way, in the training camps for convalescents so largely used in the last two years of the war by the British forces in France.

The advice to dismiss from the Army cases of sinistrosis is very general. This counsel does not consider the pernicious influence of these men upon civilian morale. It is, therefore, less dangerous to keep them in the Army in special centers, isolated from contact with their fellows, as was being done in France towards the end of the war.

To be distinguished from the sinisters are the cases of simple *exaggeration and perseveration* which are almost the rule in wounded or sick soldiers. Some of them are very obstinate, but the majority can be successfully dealt with by a medical officer who does not allow his heart to run away with his head, and who understands the psychology of the soldier.

An obstinate *perseverator should never be discharged* as has been the practice in some armies. It affords an example far from salutary to other soldiers and is of incalculable harm to the civilians who learn of his successful evasion of service. When perseveration takes the form of persistent pain, the patient is often sincere. This is particualrly true of pains in the back, or of sciatica, or of pains in a wound or joint. A proper re-education followed by training renders the man fully fit for active service. Faulty attitudes and movements often follow periods of prolonged pain. Re-education will likewise remove them and restore their producer to duty.

Defectives who become hospitalized from some other causes need not necessarily be discharged because defective. When cured of their

acute condition they become useful in labor battalions or may even be fit for strictly military service.

Constitutional psychopaths should either be discharged or utilized for active duty. They are disturbing elements among troops at rest.

General Paralysis and the War.—Kahn, in *Journ. de Med. et de Chirg. Prat.*, 1919, Vol. XC, concludes that the war has been without influence on the frequency of this affection, but that the interval of latency may have been shortened, while in some cases the course is accelerated. Points which may be determined in a few years relate to the percentage of cases of paresis in cases of syphilis which have developed during the war. Other subjects of interest are presence or absence of a special strain of spirochete, early meningitis and its influence on the development of paresis, possibility that the meningocortical region is an area of least resistance. The meningoencephalitis of syphilis has no relation to any other state which induces dementia, and produces so-called general paralysis. The criteria here include bacteriology, the clinic and biological resources. Traumatisms, exhaustion, and emotional states are not necessary for the production of this affection.—*American Journal of Syphilis.*

Diagnosis of Late Syphilis in the Central Nervous System.—C. Frothingham, *American Journal of the Medical Sciences*, states that a blood serum Wassermann is now a routine in most hospitals, and as a result a great many more cases of syphilis are encountered than would otherwise be found. Just what the significance of a positive Wassermann reaction in the blood serum is in each individual case is not always clear. Our present view is that a positive Wassermann reaction, if persistent, means the presence of living spirochetes somewhere in the body. If there are living spirochetes somewhere in an individual it is important, especially in cases of some years' duration, to find out where they are, for if the central nervous system is involved and the original infection with syphilis occurred some years before, the type of treatment to be instituted is different from that which would be used in early syphilitic infection or in old cases of syphilis in which the central nervous system is not involved.

The question arises, therefore, in cases of syphilis in which the infection is of some years' duration, and in which the presence of the disease was suspected only by the finding of a positive blood serum reaction, whether involvement of the central nervous system can be detected without resort to lumbar puncture.

A series of cases (231) were studied at the Peter Bent Brigham Hospital with this end in view. At this hospital the cell count in the spinal fluid and the Wassermann reaction with 1 c.c. or less of the spinal fluid are the two tests upon which reliance is placed to show the activity of the spirochetes in the central nervous system. All the cases in the series had a positive Wassermann in their spinal fluid when 1 c.c. of the fluid was used and many with a smaller amount. Most of them had an increased cell count in the spinal fluid, but in a few instances the cell count was normal.

Of the 231 cases, 121 were diagnosed as tabes. Of these 121 cases

a definite history of syphilis was obtained in 47; in 11 cases the history was suggestive of syphilis; in 63 cases there was no history of a past infection of syphilis; 112 of the 121 cases gave symptoms in the history of their present illness which was very suggestive of tabes. The symptoms included, in addition to the usual ones of disturbance of locomotion, lightning pains and urinary difficulties, those which pointed exclusively to the stomach and which under certain circumstances might have been justly attributed to stomach disorders. In 107 of these the pupils were either irregular in outline, unequal or failed to react to light. In 90 of the cases the knee-jerks were absent, increased or markedly variable in strength on the two sides. The Romberg test was positive in 62 cases. The Wassermann in the blood and serum was positive in 75, negative in 40 and not reported in 6 of the cases. Only 2 of the 121 cases showed no physical signs or points in the history that would make one think of syphilis of the nervous system.

Of the 231 cases, 9 were diagnosed as syphilis of the cerebrospinal meninges. Four of these gave a definite history of syphilis. In all 9 cases the present illness pointed definitely to an involvement of the meninges of some form or another, so that a lumbar puncture in each case was indicated.

Of the 231 cases, 45 were diagnosed as general paresis. Of these, only 10 gave a past history of syphilis. In 38 the history of the present illness pointed quite definitely to some involvement of the central nervous system.

Fifty-six of the 231 cases were diagnosed as cerebrospinal syphilis. Of these, 28 gave a definite history of syphilis; 51 presented symptoms in the present illness which were suggestive of involvement of the central nervous system; 35 showed inequality, irregularity or some disturbance in reaction of the pupils; in 28 there was some disturbance of the knee-jerk and in 10 the Romberg was positive; 38 cases showed a positive serum reaction, 15 a negative and in 5 the report was missing. —*Urologic and Cutaneous Review.*

Some Observations on Syphilis of the Central Nervous System.—G. O. Scott, and G. H. Pearson, *American Journal of Syphilis*, April, 1920, present an elaborate study of syphilis of the central nervous system, which may be briefly summarized as follows:

1. The Spironema pallida invade the central nervous system during the early part of the stage of generalization of syphilis.

2. On account of the great damage done by the Spironema pallida to the central nervous system, if treatment of a neurosyphilitic is delayed, a proper diagnosis should be made and treatment instituted at the earliest possible date, viz., before clinical signs appear.

3. The only certain method of making this diagnosis when it will be of most value to the patient, is by performing a lumbar puncture and examining the cerebrospinal fluid. A lumbar puncture should be done on every case of generalized, late and asymptomatic syphilis, on every case of primary syphilis with a positive blood Wassermann, and on every case of nervous disease, coming for treatment. There is no reason why a lumbar puncture cannot be done in ordinary office practice.

4. If the serology does not indicate the presence of the Spironema

pallida the author does not advise treatment directed with special attention to the nervous system. They do not consider that the following findings in the cerebrospinal fluid indicate an invasion of the Spironema pallida in an early case of syphilis without neurologic signs:

(a) Cells 0 to 7. Globulin not increased. Wassermann negative. Colloidal gold negative.

(b) Cells 0 to 7. Globulin increased. Wassermann negative. Colloidal gold negative.

(c) Cells 0 to 7. Globulin normal or increased. Wassermann positive. Colloidal gold negative.

These cases should be watched with the greatest of care, but unless further indications appear at a later date no other treatment than systemic is necessary.

5. If the serology does indicate invasion of the central nervous system by the Spironema pallida special treatment for the condition of the nervous system is not advisable. The following serology findings indicate neurosyphilis, even though clinical neurologic findings are negative:

(a) Cells increased over seven. Globulin not increased. Wassermann negative. Colloidal gold negative.

(b) Cells increased over seven. Globulin increased. Wassermann negative. Colloidal gold negative.

(c) Cells increased. Globulin normal or increased. Wassermann positive. Colloidal gold negative or positive.

6. All cases of generalized, late or asymptomatic syphilis should have a neurologic examination, for in a few cases of late degenerative neurosyphilis the clinical findings are positive, but serologic findings are negative. Neurologic findings are a guide to the treatment to be adopted.

7. If the stage of invasion by the Spironema pallida is early, systemic treatment may be all that is necessary. If the stage of invasion is later or if neurologic signs are present, combined systemic and intraspinal treatment are a necessity.

8. Ogilvie's modification of the Swift-Ellis method is the most advantageous for the preparation of salvarsanized serum. There is no reason why intraspinal treatment cannot be given in ordinary office practice.

9. In cases of tabes with marked clinical signs caution should be used in commencing intraspinal treatment on account of dangerous precipitation of symptoms.

How to Treat Stammering at its Onset: Case Cured in Two Weeks.—Walter B. Swift, in a paper before the National Society for the Study and Correction of Speech Disorder, said that stammering in very young children often results from nervous stress and strain, great fright, the imitation of others and sometimes from accidents. Almost all of these things can be prevented, though accidents will happen. The imitation of another case can easily be stopped by the parents. Nervous stress and strain can be eliminated by proper home hygiene which when put into practice has known to stop a case of stammering in two weeks. Great strain from fright can be avoided by having the companions of the children refrain from purposely frightening them and after any unavoidable fright, it can be minimized by proper conversa-

tion and advice thereafter. Dr. Swift described one case cured in two weeks.

Unilateral Intention Tremor—Report of a Case.—John J. Moren, *Mississippi Valley Medical Journal*, February, 1920, reports the case of an apparently healthy man, aged about thirty years, with good family history, who has had fifteen or twenty operations for nasal polypi. About four weeks prior to report he became ill, but the history of his attack was rather indefinite. Two weeks later he awoke with numbness in left side, with weakness and difficulty in controlling speech and extremities of left side, followed by typical intention tremor; when at rest or sleeping no tremor is noted. He has the typical scanning speech which is usually present in cases presenting intention tremor. The reflexes on the left side are a little more active than on the right; no Babinski; no cranial nerve involvement demonstrable; no difficulty in deglutition; dilated left pupil which contracts normally to light; increased width of the left palpebral fissure, and slight muscular weakness of the left face. Pulse has ranged from 90 to 100; temperature and respiration about normal. No other symptoms.

The author is in doubt as to whether there is a lesion in the medulla on the left side, or whether there is a right cerebral lesion. All the symptoms are on the left side. He does not believe there is a cerebellar lesion. If there were right-sided instead of left-sided manifestations, a lesion involving the lenticular nucleus might be responsible, since cases have been reported where lesions in the left lenticular nucleus have given rise to typical scanning speech with intention tremor of the right side.

The fact that all the symptoms are left-sided would suggest a lesion in the medulla, although hypoglossal disturbance and intention tremor would seem to indicate a right-sided brain lesion. There has been no nystagmus nor double vision.

Nonconcomitance of Spinal Fluid Tests.—H. C. Solomon, *Archives of Neurology and Psychiatry*, January, 1920, from the routine laboratory examination of several thousand fluids and examination of spinal fluids from cases of neurosyphilis undergoing treatment, in which the five tests ordinarily used, were made, concludes that only cells and albumin are normal constituents of the fluid, and the excess amounts of these are evidence of pathology. The Wassermann reaction is for practical purposes specific for syphilis of the nervous system. Pleocytosis, globulin, albumin and colloidal gold reaction are generally indicative of an inflammatory reaction of brain, cord or meninges. These tests may be positive owing to infection, mechanical injury, tumor, trauma, vascular insults, multiple sclerosis, etc. As a rule, globulin, albumin increase, pleocytosis and a positive colloidal gold reaction occur together and when the Wassermann reaction is positive, it is usual for the other four to be positive also. Although usually present together and in a general way indicative of the same pathologic condition, each reaction is produced by a distinct chemical element which may be present alone (except that theoretically globulin means an increase in the total amount of albumin, as globulin is a special albumin). Thus one may find the Wassermann reaction positive, all other tests negative,

a positive colloidal gold reaction as the only positive finding, only a pleocytosis or merely an albumin increase, or they may occur in various combinations. This is theoretically possible on the basis of difference in chemical constitution, and it is shown in this paper that this actually does occur.

Additional evidence of the independence of each element is offered in the result of treatment of cases of neurosyphilis. Starting with all tests positive, it is shown that they become negative often one at a time and the different combinations are left positive, or only one is left positive.

This study discloses:

There is a nonconcomitancy of the inflammatory elements of the spinal fluid commonly tested for in diagnosis of disease of the central nervous system.

Any one may be present or absent when the others are present—with the exception that globulin presages an increased amount of albumin.

No spinal fluid can be considered negative in which all these tests have not been used.

No one element tested for contains the element or fraction that gives another test, except that the total albumin contains the globulin fraction, in part at least.

In neurosyphilitic cases receiving treatment these substances disappear at differing rates which vary in different cases, so that no general law can be laid down as to which element is most easily affected by treatment in any particular case, though in general the pleocytosis disappears first.

The presence or absence of these products of inflammatory reaction does not always parallel the clinical change in the treated neurosyphilitic patient.

A Case Showing the Brown-Sequard Syndrome.—Dr. J. M. Stanton, *Journal Missouri State Medical Association*, March, 1920, reports the case of a male patient, aged 26. Past history uneventful. In August, 1918, he was stabbed in the back with a curve-bladed pruning knife. He immediately fell to the ground and was paralyzed below the waist; for about ten days was incontinent. Muscular power gradually returned in the left leg and in three weeks recovery was practically complete. After six or seven weeks he began to move the toes of the right foot. Strength has gradually returned, and at present he is able to walk without support, but with semi-spastic gait on the right.

Examination shows a small healed scar one-half by one centimeter just to the right of the fifth dorsal spinous process. Cranial nerves and the upper extremities show no abnormality. There is a marked paresis of the right leg, of the upper neurone type. Strength in the left leg is normal. Right knee and Achilles jerks markedly increased with patellar and ankle clonus on this side. On the left the knees and Achilles jerks are reduced and there is no pathologic toe sign.

The most interesting abnormalities are in the sphere of sensation. On the right side, in the region of the sixth spinal segment, there is a questionable band of hypesthesia. The entire right leg is hyperesthetic (according to the patient). On the left side from the eighth spinal seg-

ment downward, and extending irregularly up almost to the mid line, there is loss of sensation to pin prick and to heat and cold. Tactile sensation in this area is normal. The area of loss to pin prick is slightly greater than to heat and cold. Deep pressure, muscle-joint and vibratory sense is normal in both legs.

The blood Wassermann is negative as is also the spinal fluid examination and the spinal fluid Wassermann. Roentgenographic examination of the spine shows no foreign bodies. The findings in this case all point to the existence of a partial hemisection of the spinal cord in the upper dorsal region, eighth spinal segment, which is the result of a stab wound.

THE SYPHILITIC FACTOR IN INSANITY.—W. A. T. Lind, *Medical Journal of Australia*, points out that there are certain types of insanity which show syphilitic changes post-mortem, these types being *dementia precox, epilepsy and congenital mental deficiency.* These types of insanity are, practically speaking, insanities of youth, an age at which the most skeptical would have to admit that atheromatous vessels are distinctly out of place, or that a definite sclerosis of the spleen, kidneys and liver, with a marked pattern of the capsule of the last-named organ, are sufficient justification for the diagnosis of congenital syphilis. These and other findings occur so constantly in definitely known congenital syphilitics that there is not a doubt about their significance. Of 40 cases of dementia precox subject to autopsy 36 showed evidences of syphilis.

In regard to congenital mental deficiency, not epileptic, an analysis of the post-mortem findings in 100 deaths showed 65 undoubted syphilitics. Of the remaining 35 some were suspects.

An examination of the post-mortem records of cases of epilepsy show a predominance of syphilitic changes. With the exception of the macroscopical changes in the brain, which are found in the cases of epilepsy associated with congenital mental deficiency, the post-mortem findings in the other organs are very much alike both for the epileptics with congenital mental deficiency, and the epileptics who were not congenital mental defectives.

It would be absurd to say that syphilis is the cause of every insanity, but it would not be far short of the truth to say that the combination of psychopathic inheritance and acquired or congenital syphilis is the cause of a great deal of insanity. The age of the general paralytic (acquired) used to be somewhere about 49, but judging from post-mortem examinations of the last few years it seems to be gradually approaching 30. In other words, syphilis is acquired almost before the youth is mature. It looks as if the stone, bronze and iron ages will be recognized by posterity as being followed by the syphilitic age.

RESULT OF TREATMENT OF NEUROSYPHILIS (GENERAL PARESIS AND CEREBROSPINAL SYPHILIS). REPORT OF PATIENT'S CONDITION FOUR YEARS OR MORE AFTER LEAVING HOSPITAL.—H. C. Solomon, *Boston Med. and Surg. Journ.*, 1920, reviews four years or more after the dismissal from the hospital of ten cases of neurosyphilis who were reported as aided by antisyphilitic treatment. Nine of these patients were committed as insane, the remaining case was diagnosed general paralysis, but not

necessarily commitable. Eight cases were diagnosed general paralysis, two as cerebrospinal syphilis. It should be added that the diagnosis of cerebrospinal syphilis was changed from general paralysis on one of these two only because he cleared up under antispecific treatment. The mental symptoms were those of paresis. Of the eight cases diagnosed general paralysis, five are now living at home. Three are apparently entirely well, two while not well are able to care for themselves and live a normal life in the community. Two are dead and one is in a hospital. One of the two who died had a fair remission with economic efficiency for eighteen months and had all laboratory reactions negative at one time. The one who was in the hospital had a remission of three years' duration. Two cases were diagnosed cerebrospinal syphilis (nonparetic), but with marked mental symptoms. One left hospital apparently entirely normal and with negative laboratory signs. He has been lost from view. The other is now serologically negative and mentally normal after four years. Of eight cases diagnosed general paralysis, three are apparently well after four years; two are well enough to live outside and care for themselves; one had remission of more than three years' duration, now in hospital; two are dead, having had remissions of eighteen months each. Of two cases diagnosed cerebrospinal syphilis with mental symptoms, one is lost from observation, the other is mentally normal and serologically negative. This report leads the author to feel that it is possible to help a portion of cases of general paralysis or cerebrospinal syphilis with mental symptoms and that intensive, systematic treatment will change the prognosis of general paralysis. It was not the intention to discuss the percentage of cases of general paralysis that could be helped when this report was first made in 1916, but it did represent a fair percentage of cases that had had intensive treatment. At this time the desire is merely to bring this report up to date. It does seem encouraging, however, that the results have been so good for such a relatively long period. The author concludes that the majority of cases of syphilis of the nervous system, whether the so-called cerebrospinal syphilis, tabes dorsalis, general paralysis or other forms, are entitled to treatment, and if this is done thoroughly, intensively and systematically the results will be gratifying. The form of treatment, mercury, iodide, arsenic intraspinous and intracranial injections, and the amounts will necessarily depend upon the condition of each individual patient.

Early Recognition of Cerebro-Spinal Syphilis.—C. F. Neu. *American Journal of Syphilis*, calls attention to the frequency with which in incipient cerebro-spinal lues the underlying syphilitic condition is unrecognized or overlooked. He gives an illustrative group of cases where there was not only a negative history as regards infection but the serologic findings were also negative. This led to a provisional diagnosis of a non-syphilitic lesion but the therapeutic test brought about complete recovery.

Case 1. Male, 31, married, no children, insurance man. Family and personal history negative except digestive disturbance for years (gaseous eructations, sour stomach) which would last for several weeks or for several months. Headaches, which would come on with vomiting, preceded the stomach attacks. For several days prior to examination

the patient had been going into a semi-stupor. Examination showed that he could be roused and could answer questions but was slow to comprehend and to respond. Movement of left arm and hand slow and with considerable incoordination; muscular power lessened. Joint movement and sense of position uncertain. Tendon reflexes more active in left arm and leg. Sensation apparently unimpaired. Pulse 52, systolic blood pressure 135, diastolic 90. Urine negative.

Eye examination: indefiniteness of disc outline, most marked in upper nasal quadrants with considerable reddish striation, all being more marked in left eye.

Wassermann of blood and spinal fluid negative. Spinal fluid pressure somewhat increased. Cell count 2 per cm., protein content and Fehling's reduction apparently normal.

Probable diagnosis of brain tumor made, non-syphilitic in character. Left to await development of more localizing symptoms. In the meantime patient placed on mercury and KI and by the middle of the second week of treatment it was becoming apparent that the mental condition of the patient was becoming clearer, that the headache was better, improvement in the arm and leg and a subsidence of the blurring of the optic discs. Improvement was progressive and within three months the patient was apparently well and able to follow his occupation.

Case 2. Male, 56, married twenty years, two children both healthy. Except for cerebro-spinal meningitis in childhood, patient was perfectly well up to seven years ago when he underwent operation for hemorrhoids. Gonorrhea at age of 18, but denies any lues. Family history negative. During last five years has suffered from headache, mostly frontal and usually worse at night. In the fall of 1917 there developed restlessness, nervousness, sleeplessness and at times acute transitory pains in legs below knees.

About six weeks before consultation there came on drooping of left eyelid, rather suddenly. From this time the patient complained of double vision, which necessitated his giving up his business activities. Investigation of his business disclosed the fact that he was in debt and had spent money freely and injudiciously.

Examination showed ptosis of left eyelid, paralysis of muscles supplied by third nerve, dilatation of left pupil, pupillary reaction to light absent in left eye, Romberg symptom present, absent patellar and Achilles reflexes.

Wassermann of blood and spinal fluid positive.

No speech or writing defect and no noticeable impairment of memory.

Patient placed on neoarsphenamine and mercury for three months. Patient became well enough to resume his business. Paralysis of left eye and eyelid disappeared, but loss of pupillary reaction and tendon reflexes still persist. Patient absolutely denies syphilis.

Case 3. Female, 46, married, three children, no miscarriages. Pneumonia at 15, typhoid at 22, no complications. No venereal history. Menopause at 43, since which time patient has not been well. Family history negative.

Present illness developed gradually and was ascribed by her physicians to the menopause.

At first there were sharp, transitory pains in various parts of her

body, often followed by a local sensitive feeling lasting for a short time. Later there developed pains between the shoulders which would come and go. After a couple of years there was numbness in all her extremities, more marked on left side, and more or less stiffness and clumsiness in movements. General weakness gradually became more and more marked. During past year considerable cramping in muscles of left leg and arm and difficulty in controlling the bladder and bowel functions. Of late she has also had some difficulty in swallowing fluids because of a tendency to regurgitate through the nose.

Examination showed considerable emaciation, general muscular weakness, marked ataxia and incoordination in all movements, all more marked on the left side. Pupillary reflexes to light absent, right worse than left, absent patellar and Achilles reflexes, marked Romberg, speech and writing impairment characteristic of paresis and marked dementia. Wassermann of blood and spinal fluid strongly positive. Ultimate outcome: patient died in Insane Hospital.

Case 4. Male, 56, married, two children, healthy. Patient never used alcohol to excess, never sick in bed since childhood. About two years ago he began to complain of nervousness and failure of memory. His condition was attributed to overwork, arteriosclerosis, neurasthenia and digestive trouble, but regardless of what treatment was given he continued to grow worse. During past year, at times some impediment of speech. Went South where he appeared to improve physically and mentally, but on the night of his return home he was seized with a convulsive attack, becoming unconscious, biting his tongue, frothing at the mouth, the attack lasting several minutes. The following morning the emotional instability was quite marked with some tendency to talkativeness, exaltation, restlessness and overactivity in his movements.

Wassermann of blood and spinal fluid strongly positive. Spinal fluid pressure considerably increased, globulin increased, cell content 40.

Antisyphilitic treatment not given owing to objection of family. Patient died two months later.

Case 5. Male, 31, used alcohol rather freely. Admits infection at 21 for which he took treatment from time to time. Gonorrhea at 26, lasting several months. Four years ago began to complain of inability to control bladder function and some difficulty in walking, particularly on going up stairs, a tendency to stumble when running. A lessening in sexual power. During past years there developed a clumsiness in use of hands in carrying out finer movements.

Examination: pupils contracted, non-reactive to light, marked Romberg, absent patellar and Achilles reflexes, slight ataxia in gait. Wassermann positive blood and spinal fluid.

Four years later he returned for re-examination, complaining of numbness from knees down and about the rectum and buttocks, a feeling of tightness about the lower abdomen, incontinence of urine, loss of sexual power, difficulty in controlling the bowels, fatigue after slight exertion.

During this interval patient had received numerous intraspinal and intravenous injections as well as mercury by mouth, inunction and intramuscularly, and also potassium iodide in as large doses as could be borne. In spite of all treatment the condition progressed and patient died 18 months after date of last examination.

Case 6. Female, 33, married 14 years, never pregnant. Scarlet fever at 8, diphtheria at 10 without complications. For the past year there developed what the family called nervousness, characterized by lessened control of the motions, greater excitability, tendency to talkativeness, and a lowering of the ethical tone. This led to operation being performed in which the tubes, all of one ovary and part of another were removed. Following operation she was taken to the country where she apparently improved. But shortly after her return home the condition became more marked.

Examination: emaciation, pupils unequal but reacted to light and accommodation, tendon reflexes very active. Otherwise no abnormal physical conditions ascertainable. Mentally she was very emotional and excitable, rather talkative and hilarious, suggesting a hypomaniacal state. She asserted repeatedly that there was nothing wrong with her. Manifested a lack of modesty. Speech and writing somewhat tremulous and suggested paresis.

Wassermann of blood and spinal fluid strongly positive. Colloidal gold curve characteristic of paresis. Treatment without effect. Patient ultimately committed to Insane Hospital. There was absolutely no history of syphilitic infection in this case.—*Urologic and Cutaneous Review.*

NEURO-DIAGNOSIS.

Climacteric Disorder in the Male.—G. H. Candler (*American Journal of Clinical Medicine*) discusses the "climacteric changes" in the male. He quotes Nascher, who states that the climacteric in the male occurs about the latter part of the seventh or eighth decade. This is the transitional period between old age and senility and corresponds to the critical period that occurs during the period of development called puberty and the critical period called the menopause in the female.

That the man in the seventh or eighth decade undergoes changes of a pronounced type is true, but this period does not correspond to the menopause in women. It seems plausible to apply the term to those varied but very distinct changes that occur much earlier in life—between the forty-fifth and fifty-fifth year. At about this time there begins a transitional period of the greatest importance, which, unfortunately, is not generally recognized. The more highly constituted and intellectually active the individual, the more certain are the evidences of retrogression to occur. It is true that every man does not complain of failing sexual powers during this period; in fact, there may be a heightened libido and potency. But this very change in a man hitherto comparatively sexually quiescent indicates some disturbance of the internal secretions —a dyshormony—and especially if accompanied by a vague feeling of of unrest, loss of weight, loss of concentration, it almost invariably means the beginning of the climacteric proper.

Very many observations might be quoted to prove that dyshormony either causes or progresses *pari passu* with the apparent physical and mental changes of middle life. Heretofore, unfortunately, physicians have given this matter little or no thought, and not many years ago the average practitioner would have smiled in a superior manner had one mentioned the "male climacteric."

The immediate recognition of the climacteric disorder is not a simple matter and yet a thorough examination of the patient, his blood, urine, and perhaps, stomach contents will throw a flood of light upon what may prove a very dark subjective symptom-complex. In nearly all cases we find evidence of autotoxemia and more or less albumin in the morning urine. The blood pressure may be high, normal or subnormal, yet, strangely enough, each patient complains of almost identical distress.

The endocrinous glands may be divided into two groups according to the action of their internal secretions: (1) The "accelerator" group, including the suprarenals, and thyroid. The adrenals cause mobilization of carbohydrates in the liver. The thyroid causes increased fat absorption. (2) The "inhibitory" group, comprising the pancreas and parathyroids. Both retard protein metabolism and restrain sugar mobilization in the liver.

The gonads or sexual glands also have an internal secretion. There has been demonstrated a dominance of the nervous system over the internal secretions. Any disturbance of this perfectly controlled cycle brings lowered nutrition, diminished metabolism and incipient degenerative processes. The individual becomes physically and mentally uneasy and may present symptoms so contradictory and various that the busy doctor mutters something about "neurasthenia."

The Diagnosis of Late Syphilis of the Central Nervous System.—Channing Frothingham, *American Journal of the Medical Sciences,* 1919, Vol. CLVIII, p. 312, asserts that in a very high percentage of the cases there are strongly suggestive symptoms in the history or positive signs on physical examination. However, many of these cases might have shown an increased cell count and a positive Wassermann test in their spinal fluid long before any symptoms on the part of the central nervous system appeared. These cases, therefore, help us little, if any, in trying to decide if involvement of the central nervous system in old syphilis occurs without physical or other signs. On the other hand, in all the groups of cases except that of syphilitic meningitis, there was a small percentage of cases in which there were no signs or symptoms to call one's attention to the central nervous system. These cases. therefore, would have been missed in the routine examination of patients but for a custom of investigating the central nervous system in many of the old cases of syphilis discovered on examination or by a routine blood-Wassermann test. Even more striking in regard to the need of investigating the spinal fluid in cases with positive Wassermann, in which the infection was some years previous, are the cases in which a positive Wassermann in the blood had been ignored because of lack of symptoms or signs and in which subsequently evidence of advanced tabes was found. This small group of cases shows definitely that it is possible to overlook involvement of the central nervous system with syphilis in an ordinary careful history-taking and physical examination as completed in the wards of a general hospital even when syphilis is known to exist. This possibility of error must become magnified in busy out-patient clinics. The study of the spinal fluid will readily give evidence of syphilis of the central nervous system when symptoms and physical signs are not obtained on careful routine examination. There-

fore, as the procedure of lumbar puncture, although somewhat time-consuming to the patient, is practically without danger; and as it opens up a means of diagnosing late syphilis of the central nervous system when other diagnostic means fail, and as late syphilis of the central nervous system calls for special form of treatment, it seems fair to demand that in all cases of old syphilis a lumbar puncture should be performed as a diagnostic procedure before instituting treatment.—*Amer. Jour. of Syphilis.*

NEURO-ETIOLOGY.

Headaches of Ocular Origin.—W. W. Wright, *Canadian Practitioner and Review*, February, 1920, expresses the opinion that some abnormal condition of the ocular apparatus is the commonest cause of frequent headaches, and quotes: "Of all forms of headache probably not less than 40 per cent. are due to the ocular element; while of all bilateral frontal headaches 75 per cent. are due to that cause."

The author does not consider as a headache those pains that arise from inflammation of the anterior part of the eye as, e. g., iritis, the pain of which at times is so severe as to keep the patient awake throughout the night, and is located in the eye and radiates from there to the surrounding parts especially to the forehead. In these cases the accompanying injection, the photophobia, tearing, etc., at once direct one to the eye as the source of the trouble.

Headache from eye strain is most frequently frontal, next deep orbital, then fronto-occipital, then temporal. Purely occipital headache is seldom due to the eye. Again it is nearly always bilateral, although frequently more severe on one side than the other and although the severer pain is often found on the side of the worst eye, this is not necessarily the case. The headache of eye-strain is seldom severe or accompanied by nausea or vomiting. Probably the most generally useful diagnostic point is the fact that these headaches usually follow prolonged and continuous use of the eyes, particularly for near work, such as reading, writing, sewing, fine painting, the use of the typewriter, typesetter and numerous other modern machines which demand a maximum of close attention.

In other cases much use of the eyes for distant vision will cause headache, in which motion especially of a panoramic nature seems to be the essential factor, e. g., an ocular headache is often the result of a shopping expedition, a crowd, a railway or motor journey or an evening at the theatre, especially at the movies.

Headache from eye-strain is practically always a day headache; it does not keep the patient awake at night and he seldom wakes with it in the morning, because when the use of the eyes is discontinued the reflex pain stops.

Objectively the eyes frequently reveal eye-strain, as there is often some blepharitis or congestion of the palpebral and bulbar conjunctiva or there may be a tendency to photophobia or watering, though photophobia may be a marked reflex symptom of headache from other causes.

The conditions that cause eye-strain are errors of refraction, anomalies of accommodation and convergence and disturbances of muscular equilibrium, the so-called heterophorias. Of the errors of refraction,

hypermetropia and astigmatism are the great offenders. Simple myopia seldom causes headache as the patient can see well near at hand and cannot by any effort see well in the distance. The same is true of the very high degrees of hypermetropia and astigmatism—their disability is too great to overcome and so they do not try. Of the heterophorias the most troublesome are hyperphoria and exophoria, the latter frequently combined with weakness of convergence.

NEURO-PATHOLOGY.

NEUROSYPHILIS.—In a recent issue of the *Mississippi Valley Medical Journal*, J. R. Thrasher states that in the beginning of a syphilitic infection we have only a small number of parasites. These multiply and increase in number until the climax culminates in the secondary stage. At this period we have an invasion of practically every organ and tissue of the body with the treponema pallidum. Following the secondary stage there is a decrease in the number of invading organisms and their persistence and localization in certain tissues. While these localizations may occur in any place in the body and vary in different patients, yet certain tissues and organs seem particularly liable to harbor spirochetes. The central nervous system is one of these favored locations.

Syphilitic pathology of the central nervous system may conveniently be considered under the following heads:

(1) Vascular.—The essential lesion is an endarteritis and the disturbances those of a disturbed circulation.

(2) Interstitial or Exudative.—In this type we have inflammation of and proliferation of the interstitial or supporting tissue. The perivascular spaces are disturbed. The injury is both mechanical and toxic.

(3) Parenchymatous.—In this type we have injury to and degeneration of the nerve cells.

Regarding treatment, the author draws the following conclusions from his personal experience:

(1) Salvarsanized serum is a most useful aid in combating neurosyphilis.

(2) The biggest factor in the successful handling of neurosyphilis is early diagnosis and early treatment.

(3) The majority of invasions of the central nervous system occur just prior to or early in the secondary state of syphilis.

(4) Paresis would be a rarity provided the diagnosis of invasion of the central nervous system were made early and promptly.

(5) Spinal puncture with complete examination of the spinal fluid should be made as early as possible in every case of syphilis.

(6) The treatment of each patient is individual. Certain general statements may be made. Salvarsan, as a rule, acts better than anything else, and is our sheet anchor. Large doses are not well tolerated. Small injections at short intervals are better. Patients with severe or extensive pathology require still smaller amounts. Iodides should never be forgotten. Mercury is valuable as an aid to salvarsan and is best given by intramuscular injection. Iodides often increase the therapeutic effect of mercury. Intraspinous therapy is a most use-

ful method of treatment and represents a distinct therapeutic advance (Swift and Ellis method, Ogilvie method, Fordyce method).

Spirochetes as Related to Paralytic Processes.—F. Jahnel, *Correpondenz-Blatt für Schweriz er Aerzte*, 1919, writes that the demonstration of spirochetes in the brain of paralytic patients has led to a series of extremely important and interesting pathologic findings. Spirochetes have been discovered in only one-fourth to at most one-half of the cases (dark-field illumination) and are not any oftener demonstrated in cerebral puncture fluids. Their number is subject to great local and temporary changes in individual cases. Remissions in the course of paralysis are to be interpreted as intervals due to the liberation of antibodies. Two types of distribution of spirochetes can be distinguished: first, their localization in strictly circumscribed foci; second, their diffuse distribution. The seats of predilection are the anterior portions of the brain, especially the frontal pole gyrus rectus. It would not seem to be justified to insist upon the demonstration of spirochetes in all cases of paralysis, in view of their rarity in many brains, but their presence may be assumed in every paralytic brain. The paralytic seizures are acute exacerbations, anatomically represented by an enormous destruction of nervous tissue. At the same time, a very active and extensive proliferation of spirochetes takes place in the brain, more particularly in definite cortical territories.

Death in a paralytic attack means not only death through cerebral lesions, but death due to the action of spirochetes. Paralytic seizures comprise, besides epileptiform and apoplectiform attacks, sudden more or less complete loss of consciousness, and other sudden psychic aggravations. In such cases, masses of spirochetes are formed. as in a congenitally syphilitic liver. No action of spirochetes on other organs enters into consideration in paralysis. No proof of any kind is available for the assumption of a toxic action. The spirochetes in these cases are rapidly destroyed. Salvarsan (arsenobenzol) treatment does not influence the findings. Febrile affections in paralytic patients may be followed by remissions as well as exacerbations; based on personal experience with a case of this kind, the author is enabled to state that even a severe suppuration in the brain, as in purulent meningitis. exerts no influence upon the spirochetes and that the hope of controlling the paralysis by means of artificial production of leucocytes must be abandoned. The histologic change constitutes the terminal result of the gradually progressive pathologic process, while the spirochete picture reflects the condition prevailing at the instant of death. Hence the existing histologic findings must not be charged unconditionally to the spirochetes which happen to be present in that locality. The tissue reaction in paralysis is probably delayed, just as the secondary phenomena of lues are preceded about three weeks by an inundation of the blood with spirochetes. The two modes of spirochete distribution may merely represent different stages of the same process. Spirochetes have been demonstrated in the blood vessels of the brain and presumably penetrate the vascular walls as a result of their free motility. Their multiplication in the brain is suggested by the appearance of clusters of colonies. It still remains an open question why the spirochetes do not lodge in other organs of paralytic patients. They may persist for years

in sclerotic scar tissue, as well as in pigmentations after healed skin eruptions; such remnants have a tendency toward excentric distribution, a similar regional migration of the virus probably occurring also in the paralytic brain. Spirochetes are found only in the gray matter, occasionally in very small foci of spherical form. In paralysis, the gray cortex constitutes a perennial and constantly renewed infectious focus, from which the parasites may enter the blood, but are carried back again by the blood into the nervous system. The variable distribution of the paralytic process in different cases is referable to the localization om the spirochetes, which varies in individual cases. Diffuse affections are accounted for by repeated disseminations through which each locality is repeatedly attacked by spirochetes in the course of the paralytic process.

Nature of Latent Meningitis in Syphilis.—A. Sezary, *Paris Medical*, 1919, emphasizes that no scientific proof has been advanced of the syphilitic nature of the latent meningeal inflammations which occur in syphilitics, meaning the direct determination of the meningitis by the treponema, which is merely probable but has never been demonstrated. On the basis of recent histomicrobiologic findings, the author propounds the theory, compatible with all known facts, that the treponema lodges primarily, not in the nervous centers, which it reaches through the general circulation. The meningitis would thus represent an ordinary reaction of the serosa in the vicinity of the foci of growth of the parasite, and undoubtedly also of the sclerotic and degenerated tissues. The process might be compared with the reaction of the peritoneum in the vicinity of infected or degenerated abdominal viscera. The meninges are known to be liable to become influenced when in contact with primary lesions of the nerve center, whether aseptic (cerebral softening, tumors, insular sclerosis) or microbic (zona. lyssa). Very recently it has been shown that in wounds of the brain, the intracranial suppuration may be accompanied by a meningeal syndrome with an aseptic purulent reaction of the cerebrospinal fluid. Briefly, the meningitis revealed by spinal puncture in syphilitics seems to the authors to be a witness (instead of the cause) of the parenchymatous nervous lesions with which it is associated. As such, it is of importance for the early diagnosis of nervous luetic affections and for the direction of the treatment. It is not, however, the common basis of these nervous disturbances, and is not entitled to the importance attributed to it by certain therapeutic methods which aim at influencing it directly through the intraspinal route, although this interpretation of latent syphilitic meningitis is still in part theoretical, the author now desires to bring it to the attention of syphilographers and neurologists.—*American Journal of Syphilis.*

Neurosyphilis.—Philip Goldfader, *New York Medical Journal*, 1919, Vol. CX, p. 278, classifies the pathologic changes that occur in syphilis of the nervous system under four headings: 1, Meningeal neurosyphilis; 2, vascular neurosyphilis; 3, parenchymatous neurosyphilis; and 4, combinations of the first three, as: a, meningovascular neurosyphilis; b, meningoparenchymatous neurosyphilis; c, vasculoparenchymatous neurosyphilis, and d, meningovasculoparen-

chymatous neurosyphilis. The symptoms usually found in patients with syphilis of the brain are as follows: headache, alteration of personality, paralysis of the cranial nerves, insomnia and disorders of motor function. The symptoms and signs of spinal cord lesions due to syphilis are Romberg sign, absent knee jerks and Achilles tendon reflex, lancinating pains, staggering gait, Argyll Robertson pupil, sphincter disturbances, sensory disturbances, visual disturbances, paresthesia and numbness of feet and lower extremities, girdle sense, loss of sexual desire, Charcot joints, hemiplegia and deafness. The indications for lumbar punctures in cases of syphilis are: 1. All cases coming under observation after the primary stage has passed as a diagnostic procedure. 2. Patients who have been under active treatment for eight to twelve months, with no improvement in the blood Wassermann. 3. As a therapeutic agent to relieve severe headache in cases of cerebral syphilis. 4. To differentiate between involvement of the nervous system of syphilitic and of nonsyphilitic origin. 5. To introduce medicaments into the spinal canal. 6. Examination of the cerebro-spinal fluid as a guide in treatment. 7. As a diagnostic measure before discharging a patient as cured. There are three methods of administering salvarsan in the treatment of syphilis of the nervous system, namely: intravenously, intraspinally, or a combination of both. Intravenous administration of salvarsan can be employed in early cases of cerebrospinal syphilis (meningitis, meningomyelitis, meningoencephalitis), early cases of tabes, syphilitic epilepsy, and secondary cases of syphilis showing involvement of the cerebrospinal fluid without nervous symptoms. The intravenous administration of salvarsan should be first tried in these classes of cases, for the improvement both clinically and serologically is fairly rapid under intensive treatment. Patients not influenced by intravenous injections of salvarsan combined with intramuscular injections of mercury and internal administration of iodides, should then receive both intravenous and intraspinal injections of salvarsan. While the intraspinal treatment of syphilis of the nervous system can be employed in all forms of the disease, it is in the parenchymatous types in which it has its greatest field of usefulness, especially in cases of tabes and paresis. In these latter cases the author employs a combination of intravenous and intraspinal injections.—*Amer. Jour. of Syphilis.*

NEURO-PSYCHIATRY.

On the Importance in Neuro-Psychiatry of a Complete Examination of the Cerebro-Spinal Fluid.—Babonneix, *Gazette des Hopitaux*, agrees with Moriez that it is the imperative duty of every clinician who has to deal with a case of nervous or mental disease to have a systematic examination made of the cerebro-spinal fluid. This examination affords an indication of decisive importance. Light or severe lymphocytosis associated with a positive Wassermann and hyperalbumosis points unmistakably to an organic lesion of the nervous system, and enables us to exclude malingering in soldiers and to lessen the responsibility for their breaches of discipline.

NEURO-THERAPY.

THE MALONEY METHOD IN THE TREATMENT OF ATAXIA.—Morris Grossman, *Medical Record*, New York, 1919, Vol. XCVI, p. 268, states that the method of treating tabetic ataxia that Maloney has elaborated is based upon the thesis that perfect thinking is essential to perfect moving; and that perfect moving is the outward sign of perfect thinking. The mental state, fatigue, and fear, Maloney combats with "rest exercises"; and lastly he has introduced blindfolding into his method as a measure to decrease external distraction, thereby allowing greater concentration and more intensive application for interpreting the delayed, imperfect, postural images that result from interference in conduction of sensory stimulae. Of the 15 cases reported here, 10 received antispecific treatment either at the time when they had their chancre, or at a later date when involvement of the cerebrospinal axis was probably evident. Some of these patients had received what might be considered adequate treatment, or nearly adequate, both at the time of their primary infection and at a more recent date; yet the disease, with the exception of slight evanescent improvement in some of the symptoms, relentlessly progressed. In others there was no improvement, and in some aggravation of the symptoms was definite. While receiving this mental treatment, with the exception of 2 cases, no salvarsan or mercury was given. The length of time devoted to each patient was governed by his mental and physical capacity for work, the average being about one hour four or five times a week. The average length of time required to cure the ataxia in this group of cases was 8 to 12 weeks. This period can be considerably shortened by intensive treatment. With this method of treating ataxia, the author was able to return to a non-ataxic state, 12 of the 15 cases here reported. Most of these patients are still in a non-ataxic state or were so when last seen or heard from. Nearly all were able to go about in public without aid; a few could not be induced to give up their stick when in public, but could get along without any aid from it. It has been a remarkable feature in all of these patients, that their attacks of pain and their cries have been much reduced in frequency and severity during and since the treatment has been given. The possibilities that this method of treatment offers to the unfortunate victim of tabes for relief of his most distressing symptoms, namely, ataxia, pain and crises, are indeed gratifying.—*Amer. Jour. of Syphilis.*

ELECTRICAL TREATMENT IN INFANTILE PARALYSIS.—A. R. Potvin, *Le Bulletin Medical de Quebec*, February, 1920, states that since the month of September last, they have seen and treated in the electrical department of the Hotel Dieu many cases of infantile paralysis. Thirty and odd children presented different paralytic affections varying in location, extent and intensity. The ages of these patients ranged from a few months to eleven and twelve years. On the one hand the slighter forms manifested themselves only in a slight disturbance of function, whereas, the more severe symptoms appeared as complete paralysis, with complete cessation of muscular action and absolute degeneration. The usual type of paralysis was noted and in some cases two, three or four limbs were affected to different degrees. Among some the poliomyelitis ascended in several months and others in several weeks. Some

of the patients found it difficult to come for treatment while many others attended the clinic a number of times. With the material so disproportionate and with so variable factors, it is not easy to make statistics. Note was taken of only certain cases and results obtained, to make observations exclusively practical; the period of the disease, when to commence the use of this treatment, and the choice course of treatment, its duration and the results which one can legitimately expect.

At what phase of this disease can and should one begin the electrical treatment? The diversity of opinion upon this subject shows that all do not look at it from the same point of view, and one encounters the most contradictory statements. Some, being alarmed by the galloping paralysis of the muscles, would begin the electrical treatment from the very first day; others, no doubt influenced by the bad results obtained from the first measures, prefer to wait weeks or months, without determining the exact limit. Between these two extremes there must be a place for electricity.

One should not treat the paralysis strictly according to text-books, but should bear in mind that the children are the sufferers. That is to say, there is no fixed and rigid formula which one might follow. Nevertheless, there are certain indisputable principles founded upon experience, and the clinical sense of the doctor, the particular indications in each case which are infinitely better than a line of conduct too strictly laid out. That is to say, there should never be a question of the use of electricity during the febrile period of the poliomyelitis, for this would not only be acting as a blind man, since one does not know the extent and gravity of the lesion, but anatomical and physio-pathological reasons absolutely forbid this procedure. The current of electricity, no matter of what kind, is a stimulant because it irritates all the cells, especially the nerve cells, and particularly if they are already the site of an inflammatory process. Moreover, this phase of the disease is often accompanied by muscular pains which are exaggerated by the least excitement. The electrical treatment is primarily a symptomatic treatment, and the inflammation of the anterior horns, if influenced at all by the electrical current, is certainly not in a favorable direction.

It is thus absolutely necessary to abstain so long as the medullary inflammation is not completely allayed. But muscular sensibility, when it exists, lasts much longer than the febrile period, and seems to indicate an irritability of the posterior horns in the neighborhood of the inflammatory lesion. This muscular hyperesthesia must be respected, and we have in mind three of our little patients, upon whom we have used electricity five weeks after the initial cure, who had a return of the pains in the course of a treatment which was well borne. One cannot be certain of giving good service to a patient by haste, since by so doing muscular atrophy ensues and this retarded progress necessitates resumption of a long and laborious course of treatment. The average time in which to expect results is four or five weeks, and often longer in severe cases. Like all averages this is very elastic and varies considerably in certain cases.

The beginning of the treatment should not be made until after a preliminary electro diagnosis. It is important to recognize what one is to treat. It is also necessary to find out by electrical exploration pre-

cisely the group of neuro-muscles which are affected, and this cannot be done by ordinary clinical examination, no matter how thorough.

To give an electrical treatment without preliminary electro-diagnosis—as Zimmern and Delhern have recommended is an absurdity which, moreover, we see daily in current practice; in the course of a clinical examination, more or less thorough, an electric treatment is decided on. Ordinarily, a little faradic box with rapid vibrator (which constitutes the Alpha and Omega of all electro-therapeutics) is used, no matter what form of paralysis, or what muscles react to the current or their degree of degeneration, and are rendered as excitable as the muscles of a cadaver.

How is it possible to treat a paralysis without results or even without danger if the electrical examination of the muscles has not been made? Shall one apply faradic current or continued current, or some other form of electricity? It is too often assumed that all currents of electricity are of equal value in their physiological effects. This is not true, for there exists a true "posology of electricity" and very sharp indications for the employment of one kind to the exclusion of others. It is the electro-diagnosis which indicates the kind of electricity to be employed. For example, *all paralysis presenting the syndrome of degeneracy should never be treated with the faradic current.* Negligence of this precaution has been the cause of incurable paralysis, definite atrophies and certain permanent contractures. One should always modify the tension of the faradic current by means of a fine wire bobbin.

We owe to Debedat's researches most of the demonstrations of the physiological and pathological effects of faradization. He applied faradization to the femoral muscles of two groups of rabbits in order to find out the difference which exists between rhythmical excitations on the one hand and tetanic excitations on the other. He submitted a series of rabbits to each current.

(a) *For rhythmical excitations,* leaving to the muscles intervals of repose between each contraction, he noted an evident hypertrophy of the faradized muscles. Microscopically, these muscles presented a normal structure, fibres regular, striations normal, no lipomatosis. The hypertrophy took place in the muscle tissue itself.

(b) *For tetanic excitations,* done with the ordinary faradic coils, he noted an atrophy of the muscle substance with lesions of the fibres themselves.

These results are sufficiently eloquent in themselves. They show us that electricity is not an agent about which one can say, "If it does no good, it does no harm," since it will often ruin a perfectly healthy muscle, how much more easily then a muscle already diseased? It is well to recall what all authorities say in regard to the faradic current in the portable apparatus which one finds in the hands of sick persons; that they are toys, but they are not harmless toys (Nogier).

The faradic current, and especially, we would say, the faradic current of commerce is then formally contra-indicated at the end of infantile paralysis. It is an entirely different matter in regard to galvanic current which is adapted to the affection which is to be treated. What is it that we aim to accomplish? On the part of the nervous system we wish to favor, as much as possible, the reparation of the peripheral neurons and on the part of the muscles to combat an atrophy

by supplementing the trophic influx of which it is deprived and to cause the motor excitation which it no longer receives from the cord. The continuous current when properly administered has an incontestably trophic action which has been demonstrated by classical physiological experiments. In proper doses it favors a natural reparative process in stimulating metabolism of the cells. As to the muscular contraction, one knows that when it is rhythmical it is the excitation which more nearly approaches that of the nerves. At every interruption of the current the muscle contracts, followed by relaxation. It is in this respect that rhythmical galvanization differs totally from the faradization. In the latter, the muscle is placed in a state of tetanic convulsion which rapidly exhausts it.

The technique of galvanization, properly speaking, is very simple; consists of an application of the two electrodes, one on the spine and the other upon the affected limb, or preferably upon the paralyzed muscle. This last precaution forces the current to pass exclusively through that group of muscles which one wishes to treat, instead of, at the same time stimulating these which are antagonistic. The exercise each muscle obtains in a rhythmical interrupted current, the interruption being made either with the hand or by means of an automatic contact breaker. The intensity of the current is from 8 to 10 M. A. This, moreover, is about a medium current tolerated by the patient.

One must not count upon results in less than weeks or months. This length of time is not surprising when one thinks of the laws of degeneration of the nerves, according to Wallerien. We know that a nerve which is divided and placed under the best possible conditions takes many months for complete repair, how much longer then, when it is not merely a matter of a simple section of the axis cylinder, but of an infectious lesion of the most important motor neurons.

By making electro-diagnosis at regular intervals and thus following an evolution of the reaction of the degeneration one is able to make an electro-prognosis and, according to the case, one may discontinue the use of one kind of current and use another, or use them in association, or diminish or augment the intensity, modify the number of the excitations in a given unit of time, or the number of applications per week, or to suspend the treatment.

The electric treatment should be followed with perseverence, and it is only in this way that one may frequently obtain unhoped for results.

Albert Weill, after having treated a series of cases, says that he has never seen a single case after six months of treatment in which the muscles remain entirely inexcitable. Before losing all hope one must be sure that there has not been any amelioration for months, either in voluntary motion or electric contractility. Following the distribution of medullary lesions one may see certain normal fibres in the midst of completely degenerated muscular fibres. "In this case," says Duchenne of Boulogne, "the healthy fibres may become the nucleus for new muscular fascia and even of a new muscle!"

The pathologic anatomy of poliomyelitis explains why it is one so rarely obtains a *restitutio ad integrum*. At the seat of the inflammation there exists a sclerosis, in other words, a cicatrice which of course cannot replace the nerve cells from a functional point of view.

If the results of electric treatment are not perfect, at least, we have the consolation of having rendered service to the sufferers and have reduced their infirmity to its minimum extent, preserved certain groups or, it may be, certain important individual muscles by which the orthopedic surgeon may profit ultimately.

THE TREATMENT OF SYPHILIS OF THE NERVOUS SYSTEM.—Silvio Canestrini, *Il Policlinica*, 1919, Sezione Pratica, believes the guide to the diagnosis of syphilis of the nervous system is furnished by the clinical signs, the reactions of the cerebrospinal fluid representing an adjuvant rather than the guide itself. The treatment of cerebral syphilis without destructive lesions, as in progressive paralysis, is rather variegated. Besides salvarsan, which is more efficient in nervous syphilis than salvarsan-natrium and neosalvarsan (20 per cent. arsenic contents), calomel with bitter almond-oil is employed in the Graz clinics; an excellent preparation is novosurol; other valuable remedies are embarin, enosol, mercurol, cinnamon oil at 40 per cent., and others. Iodide treatment is also to be recommended, and in those cases where rapid and energetic medication is desired, an intravenous injection of sodium iodide may be administered up to 25 grams in a 10 per cent. solution at each dose. Klemperer (1915) sometimes gives it immediately after the salvarsan injection. It must be kept in mind, however, that iodide even by the mouth is not readily tolerated by aged individuals, and that it should not be administered even to youthful patients, unless there is increased vascular pressure. Certain authors have tried the injection of salvarsan directly into the intradural cavity, claiming for this mode of application a direct influence upon the nervous system, which in their opinion is not obtainable with the intravenous method. Others, on the contrary, object to endospinal application, believing that it excludes the sterilization of the organism as a whole.

The cases of tabes best adapted to salvarsan treatment are those in which the disease is still in its first, neuralgic stage; existing ataxias may also prove amenable to improvement. But when the disease has reached its final stage, salvarsan is no longer indicated, because it may aggravate the clinical picture. Care must be taken not to give exaggerated doses, especially at the beginning, not more than 0.15 should be injected, gradually increasing, but never in tabes exceeding the dose of 0.45 salvarsan or 0.60 neosalvarsan. It is, moreover, advisable to keep tabetic patients in bed during the treatment, on account of the instability of the pulse so frequently met with in this disease. The clinical symptoms must be carefully watched after the injection, and over-energetic cures are to be avoided. In view of the danger of hyperthyroidism in tabes, the institution of iodine treatment must be judiciously considered, in order to guard the patient against the development of exophthalmic goiter, in addition to the tabes. Needless to say, specific treatment should be avoided in the forms of pseudotabes due to alcohol or nicotine poisoning.

The results obtained in tabes by combined salvarsan and mercurial treatment are greatly superior to those accomplished by the administration of salvarsan alone. On account of the intolerance of tabetic patients for many mercurial preparations by the hypodermic route,

treatment with mercurial inunctions is to be recommended in these cases. Favorable results have been obtained in the last few years with subcutaneous injections of fibrolysin, and, in the tabetic crises, up to twenty drops of adrenalin at 1 :. may be administered. Surgical intervention, in the form of resection of the posterior roots, following laminectomy, has also been resorted to of recent years for the relief of tabetic disturbances. This operation was originally devised and recommended by Mingazzine in Italy.

Progressive paralysis is the most deplorable syphilitic affection of the nervous system, and rarely shows the intermissions in the course of the disease which are observed in tabes. Among one hundred syphilitic individuals, there is a percentage of four to five paralytics. The reason why in a small percentage of luetic patients the central nervous system is attacked, whereas in a much higher percentage even of untreated cases it escapes, is probably explained by the theory of the existence of different varieties of spirochetes with more or less affinity for the nervous eystem (Marie and Levaditi). This theory is supported also by the occurrence of conjugal paralysis and by the fact that mostly those patients are usually attacked by tabes or progressive paralysis who in the course of the disease have not as a rule shown syphilitic affections of the third stage. Also in this disease the intravenous administration of salvarsan has yielded rather scanty results. Attempts have been made to influence the disease by antiphlogistic medication. Specific antitoxins have also been recommended. Trephining of the skull has been tried, but without effect, neither have internal treatment, electricity, and radiotherapy proved advantageous. Nevertheless, an optimistic attitude is a desideratum here as elsewhere in medicine. The view that progressive paralysis is an incurable disease is the greatest obstacle to the discovery of an efficient curative method. It is to be hoped that the day is not far distant when paralysis will possess a merely historical interest.—*American Journal of Syphilis.*

PSYCHO-PATHOLOGY.

The Histopathologic Findings in Dementia Praecox.—Eva Rawlings, *American Jour. of Insanity*, January, 1920, made a pathological study of 12 cases of dementia praecox selected from 52 cases worked up in the laboratories as being free from the many factors which so frequently interfere with an accurate estimate of the organic basis of the praecox psychosis. No case without a clear praecox history is presented; cases of manic-depressive insanity of mixed type with a long institutional residence and with terminal deteriorations giving the appearance of dementia praecox, a number of cases with onset in the early involutional period showing paranoid ideas and praecox trends which might possibly have been due to a chronic toxic visceral process as malignant disease, syphilis, etc., and cases of imbecility with more or less frequent periods of disturbance which had crept into the praecox group have been carefully excluded.

In order to eliminate superimposed senile changes no case of 60 years and over was taken, the age of 60 being considered the minimum

at which it is possible to expect senile changes other than in Alzheimer's disease.

Autopsies were usually held within an hour after death. Where longer delay was necessary the bodies were kept in coolers and post-mortem changes can be largely discounted. The nervous tissues were immediately placed in the appropriate hardening fluids with as little handling as possible, no brain being sectioned until thoroughly hardened.

The twelve cases considered show quite uniform pathological findings, which are due neither to arteriosclerosis, senility nor a long continued grave toxic process.

This pathological process is essentially a chronic one resulting in an atrophy of the nerve cell body and its nucleus, a disappearance of its stainable substance, an attenuation with partial fragmentation of its neurofibrils and an atrophy with distortion of its protoplasmic prolongations; the process terminating in either extreme pyknotic atrophy in which the shrunken cell and its prolongations are seen covered with incrustations or in a fragmentation of the nerve cell to the extent that it is either a shadowy outline or an atrophic nucleus surrounded by a fragmented rim of pale granular protoplasm.

The neurofibrils of the nerve cells show a marked atrophy with foci of fragmentation and loss in both the cell body and its prolongations. Their appearance bears no resemblance to the disintegration of the neurofibrils and the peculiar rotting off of the processes in general paralysis of the insane nor to the whorls and loop formations of senile dementia and Alzheimer's disease.

The more acutely degenerated nerve cells show marked fatty deposits in abnormal positions or entirely filling the cell bodies. The fat granules are seen in the axis cylinders and apical processes and frequently outlining the cell prolongations. The glial nuclei, especially of the molecular and infrastellate strata, show an irregular stippling with fine fat granules. The adventitional cells of the blood vessel walls and occasionally of the vessel luminae contain large amounts of lipoidal material.

The glial structures show varying degrees of regressive changes. Shrunken, frequently irregular, diffusely staining glial nuclei are seen in both gray and white substance. Fiber forming types in all stages of regression from the large protoplasmic bodies to the shrunken nuclei with exceedingly coarse fibers are seen in several cases forming foci of gliosis in the molecular and infrastellate strata. The surface mat quite generally shows an increase in width with focal extensions of its coarse fibers into the zonal layer.

The ameboid types of glial cells observed in these cases are not those found in acute terminal processes. Acute satellitosis is insignificant and inconstant. Neurophages are found closely approximated to the more acutely degenerating nerve cells or lying in lacunae of their cell protoplasm. They are seen attacking irregularly the nerve cells of all layers and are noticeably absent in regions in which the destructive processes are of long duration.

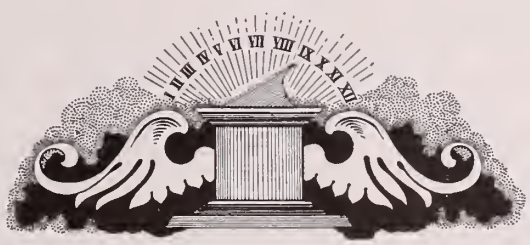
The cerebella in three cases examined showed destruction of the nervous tissues, more marked on the summits of the convolutions and decreasing toward the bases. Over the summits the Purkinje cells are extremely atrophic and pyknotic in appearance. Along the sides and bases they show varying degrees of more acute alterations. There

is a patchy loss of these cells. In one case a rather high grade glial proliferation appeared.

Considered from the regional point of view the organic changes observed in these cases were generally found most severe and of a more chronic nature in the frontal regions, though several of the cases showed the involvement most severe in the central regions. There is a surprising difference in the degree of the alterations in the two hemispheres, those in the right being usually much more recent and acute in type. Stratigraphically the first, second and third nerve cell layers show the most severe involvement, the severity and diffuseness of the changes decreasing toward the third stratum. There is a singular fragmentation of the stellate nerve cell stratum in all these cases.

While there has been no special effort in the present work to trace the disease process, a general impression is obtained from the study of the various types of cells in all strata that the initial process is one of moderate swelling of both cell body and nucleus followed by a gradual breaking down of the normal nuclear chromatin structure; later by an atrophy and fragmentation of the neurofibrils with subsequent granular degeneration and irregular clumping of the Nissl granules; the final stage terminating in one of two conditions according to the degree of the vicious influences or the original resistance of the cell, viz.: moderate atrophy followed by more or less acute fragmentation and extreme pyknotic atrophy.

Underlying the arteriosclerotic and senile changes in the cortices of the 40 other praecox cases mentioned but not reported are similar pathological changes which are readily recognized except where the superimposed alterations are sufficiently severe to mask the original ones. It seems, therefore, possible to assume that the changes described in the cases penetrated are pathognomonic of dementia praecox.



BOOK REVIEWS.

NERVOUS AND MENTAL DISEASES. By Archibald Church, M. D., Professor of Nervous and Mental Diseases in Northwestern University Medical School, Chicago; and Frederick Peterson, M. D., formerly Professor of Psychiatry, Columbia University. Ninth edition, revised. Octavo volume of 949 pages, with 350 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, $7.00 net. W. B. Saunders Company, Philadelphia, Pa., and London, England.

The popularity of this work is demonstrated by the fact that this is the ninth edition which, also, proves its worth more forcibly than words; besides we have exhausted our vocabulary of superlatives in previous reviews, so that we are now limited to a scrutiny for "flaws" or shortcomings, of which the gravest, in our judgment, appears in the discussion on "Neuroses Following Traumatism," in which the author writes: "The profession should recognize that traumatic neurasthenia and traumatic hysteria are serious and disabling conditions," which is a standing menace to justice in medico-legal cases which attorneys for claimants have not been slow to recognize. Notwithstanding the statement that "every case must be specialized and the amount of disability and the probability of its duration must be estimated from all the facts," is, apparently, an attempt to mollify the previous assertion; does it do so to any considerable degree?

May the author never suffer the misfortune of having these passages read to him in a personal damage suit against himself; but if so, it will be interesting to know how he successfully parried them; in the meantime, it might be advantageous to many of us to know how to do so. An interpretation of "serious" and "disabling" should be of interest to the medical witness and would be enlightening to the court.

We believe an elaboration of the subject of so-called traumatic neurasthenia and traumatic hysteria is called for and that the elucidation of the points mentioned is really demanded.—D. S. B.

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