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Original Articles

MALIGNANT CHORDOMA, INVOLVING BRAIN AND SPINAL CORD[1]

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Malignant chordomas are rare tumors. The present report records the seventh fatal case found in literature.

Although Virchow,[2] in first describing the pathological features of these tumors, mentions the possibility of pressure symptoms, it was not until many years after that it was recognized that they might grow to such a size as to cause death from pressure upon cerebral structures.

Furthermore the malignant features were not noted until Fischer and Steiner (*l. c.*) called attention to them.

It is further significant that, in three of the cases, the growth extended into the naso-pharynx, in one case (Linck) relieving pressure by such an escape, and permitting a diagnosis intra vitam. Therefore, we would accentuate the desirability of thorough naso-pharyngeal examination in all suspected brain tumors, especially when the symptom picture is so strikingly

[1] An abridgment of this paper appeared in the Zeitschrift für die gesammte Neurologie und Psychiatrie, Vol. 5, June, 1911, p. 590.
[2] Entwickelung des Schädelgrundes, 1857.

similar as it is in cases of chordoma reported by Grahl, Frenkel and Bassal, and in the present instance.

Our own case is of special interest because of its great size, the most extensive on record; because of the very profound nervous and mental disturbances due to pressure, at the base, and because of the occurrence of probable spinal metastases, with spinal symptoms, paraplegia, etc. It represents the complete development of all of the possibilities in the way of a chordoma.

A preliminary announcement on the symptomatology of the patient, with specimen of brain and tumor (then thought to be a sarcoma), was made before the New York Neurological Society in April, 1910,[3] by one of us (Jelliffe), while the pathological presentation of the tumor was made by Larkin before the New York Pathological Society in April, 1910.[4]

The history of the patient is as follows: Mrs. L. S., aged 36. There is a distinctly neurotic family history; the mother, intelligent and high strung, is still alive and well, at the age of 63. The father died at the age of 56 after severe mental worry. He had a rapid decline with many mental symptoms, but the exact nature of the difficulty could not be learned. The father and mother were not related. There were five children. The oldest, a daughter, 39 years of age, has had three nervous breakdowns, one attack following the death of her father, with compensatory hysterical coloring, hysterical paralyses, etc.; second, a son, 38 years old, suffers from digestive disorders, nervous dyspepsia; the third, our patient, had always been frail, but well. She always showed marked anxiety in stormy weather and was very much afraid of thunder storms. A fourth, a daughter, aged 33, is somewhat excitable, especially at her menstrual periods; the fifth, a son, is well.

No history of mental or nervous disorders, alcoholic indulgence, diabetes, epileptic attacks, tuberculosis or syphilis in the ascendants, direct or collateral, could be elicited.

The patient was normally born, learned to walk and to talk at the normal age, and learned to read at the age of six. There were no special teething difficulties; no rachitis. Of children's disorders she had measles only. She never had involuntary urination as an older child. Education—school and college.

In general, etc, beyond occasional attacks of tonsilitis, the patient had always been fairly well. She was frail, but wiry. She was of a worrisome disposition and feared thunder storms greatly. She had a small fatty tumor removed from the skin behind the ear six years ago. During her life she had several severe shocks, among them the death of her father, and three years ago her city home was almost burned down. Her mother's house was almost the only one saved, and for a long time she suffered from the shock of the fire.

She has never used alcoholic drinks, nor drugs; has never had any severe accidents, nor convulsions. She has menstruated since the age of thirteen, four married seven years and has two healthy children; no miscarriages and no children born dead.

History of illness (from husband).—Patient had been comparatively well up to June, 1909. Her youngest baby was born in February, 1908;

[3] Journal of Nervous and Mental Disease, Vol. 37, 1910, p. 443.
[4] Trans. New York Pathological Soc.

it was an instrumental delivery, but the mother made a good recovery. Her weight was then about 110 pounds. She was always a hard worker. She had been under considerable mental stress as the son of a neighbor of whom she was very fond had died and the mother committed suicide after his death. This was in July, 1908. She was then living in a suburb of New York.

On June 29, 1909, which was one of four extremely hot days, she went to New York to do some shopping. She became much exhausted and felt dizzy, and decided to come home earlier than she had intended. She arrived at her station about noon, in a terrible thunder storm, and having her oldest child with her, ran home nearly half a mile through the rain, dragging the child after her. She was much exhausted, but after resting an hour or so went into her kitchen and assisted her cook in finishing some preserving, which still further exhausted her. That evening she said "My left eye hurts me," and "I don't seem to be able to use it," and she then began to see double. "I see two or three of you."

The next day she had a severe headache, saw double and could not use her left eye. There was no nausea nor vomiting and no temperature. The following day she was taken to see a specialist, who found (personal communication) a total paralysis of the left external rectus. The pupils were normal and the fundus was reported as being normal. No other cranial nerves were then involved. She wore a shade. Immediately following this she had severe neuralgic pains situated above the left eyebrow, along the side of the jaw, and in the teeth. They also extended at times to the back of the head, and sometimes she had neuralgic pains between the shoulder blades, and she found it difficult to sleep on the left side because of these pains. There were no changes in her gait at this time and she could get about in the dark as well as in daylight. She had persistent headaches. Dr. W., the oculist, prescribed K.I. which "upset" her stomach, and she commenced to vomit. The patient had always been inclined to be fretful when ill, and her increased complaints regarding her suffering were interpreted as largely hysterical. She was continued upon the potassium iodide and expectant treatment until August 15.

Her eye palsy did not clear up, and she was growing appreciably weaker and losing flesh. She had been increasingly diffident to things about her. As her sister expressed it, "she seemed to have no initiative; she followed me around all day like a sick child."

She was then sent as a functional case to Dr. Sahler at Kingston. Here she improved for a few days; all the medicine was stopped, but she continued to vomit persistently, and then gradually grew weaker. In November Dr. Sahler noted that the knee jerks were absent, that her eye balls were immobile, her eyesight in the right eye was gone, and that she was becoming somnolent. It was about this time that she was seen by Dr. Jelliffe in consultation, November 29, 1910.

Examination.—November 29, 1910. At this time the patient is emaciated, weighs 100 pounds, is slightly cachectic; slightly somnolent, but fairly clear and cheerful.

Status Nervorum.—No painful points on percussion to head.

I. Olfactory: To soap and cologne, O. K. r = l, symmetrical. No subjective disturbances of smell.

II. Optic. Right eye: totally blind, no light perception. Left eye: can see candle, count fingers, large print. No hemianopsia in left eye.

III, IV, VI. There is complete loss of all ocular movements in both eyes. The eyes are fixed in a central position. There is no exophthalmus. There is marked chemosis of the left conjunctiva, with conjunctival, choroidal and corneal swelling of the left side. There is ptosis of the left eyelid with slight levator power; no changes in right lid. The pupils are widely dilated, 7–9 mm., r = l, slightly elliptical, the longest diameter being vertical. There is a complete loss of all reactions; light, direct and consensual, accommodation, sympathetic and convergence (psychic).

V. The patient feels light touch (camel's hair brush), over entire area of this nerve, distinguishes between head and point of pin, normal heat and cold sense (epicritic and protopathic), localizes points touched rapidly and accurately. There are no painful points (supraorbital, infraorbital or mental), no loss of corneal, conjunctival or palpebral reflexes. Tear secretion increased both sides, especially left (conjunctivitis). No loss of motor power either side.

VII. All of the facial functions are normal. Symmetrical facies to willed and to involuntary movements—(ptosis left side noted) save for slight flattening naso-labial fold left side, nasal opening left side slightly smaller. Tongue protrudes slightly to the right side, no atrophies, scars, nor tremors.

Speech slightly high pitched and nasal but unaltered. Test phrases well pronounced. No sensory aphasic speech disturbance; at times patient forgets what she wants to say.

VIII. Hearing very acute, both sides: watch tick, 18 inches; whispered speech ten feet. Impression of hyperacusis. No subjective noises. No dizziness, no vertigo. Caloric tests showed normal nystagmus.

IX, X, XI, XII. Pharyngeal pillars, r = l, symmetrical. Pharyngeal reflexes present; gagging reflex present. No changes in taste; no subjective taste disturbances.

Movements of head, neck and shoulders present; symmetrical—no palsies—no atrophies.

Upper Extremity.—No atrophies, hypertrophies, spasms or hypotonus. Muscular power is fair; no asymmetries. There are no tremors either while hands are extended, or while at rest; some slight swaying.

Nerve trunks are not painful. There is no ataxia, the finger nose test, and finger finger test being well performed. Sensibility is intact: Epicritic and protopathic touch; recognizes head and point of pin; localizes well; compass points normally recognized; no change to mild or marked degrees of heat or cold. Position sense unimpaired, deep sensibility unimpaired; bony sensibility to tuning fork unimpaired on either side. No adiadokochinesis, and no asynergia.

Both triceps and radius periosteal reflexes are symmetrically diminished. No evidence of radicular disturbance. No vasomotor nor trophic disturbances.

Trunk.—Power unimpaired; no painful pressure points along spine; epigastric, abdominal and anal reflexes present and symmetrical. No loss of power of bladder and rectum; no involuntary urination nor defecation.

Sensibility intact, tested by same methods as in upper extremity. No loss of equilibrium on back. No dermographia. No cerebellar catalepsy nor asynergia.

Lower Extremities.—No atrophies (save general slight wasting), no hypertrophies nor spasms—slight hypotonus, symmetrical. Muscular power fair, equal on both sides to all movements. Patient is manifestly weak however. Patellar and Achilles reflexes absent both sides. No Babinski, nor Oppenheim, no nerve tenderness, nor Lasègue.

Patient walks with difficulty from weakness and from slight ataxia. Knee heel test shows ataxia; there is also slight Romberg present.

Sensibility is intact throughout when tested in the same manner as for the upper extremities. No loss to bony sensibility by tuning fork, no loss of sense position; no anesthesic or analgesic patches; no trophic or vasomotor disturbances. Feet were always cold.

Status Corporis.—Patient a frail woman, reduced bodily weight, very slightly cachectic, no skin lesions, nor joint lesions. Pulse 80, no cardiac murmurs; lungs intact, no rales at apex; no evidence of hardened arteries, and no traces of intra-abdominal new growths. Urine reported by Dr. Sahler as negative.

Mental Examination.—As patient was somewhat tired after the neurological examination, a shortened mental examination was made. Patient has been somewhat somnolent. She has had troubled dreams.

Orientation is excellent at present time, both for time and space.

Memory. For school facts excellent. In geography, history, normal. For recent events fair.

(7×8) 56.

(964,173) 964,173.

(371,469) 371,469.

(7×8) forgotten.

Repetition of test with 9 × 6 and eight numbers shows excellent ability to repeat numbers, but forgets the preceding multiplication. 250 Oxford St., N., London, forgotten after 15 minutes.

$(x + 17 = 36)$ 19. O. K. $(x - 14 = 27)$ 41. O. K.

Question in change could not follow.

Masselon: (Hunter, dog, gun, forest, rabbit) Hunter went into forest with his gun and shot a rabbit.

(What forgotten) dog.

Finckh: (Rolling stone gathers) O. K.

Continuous sentence (Ziehen: If it rains)—wanders and does not hold to goal idea.

Backward association: (Manders) snae—M—sre naM after three trials.

A diagnosis of inoperable tumor at the base of the brain, probably a sarcoma, was made, and patient transferred to the Neurological Institute, in the hope that a more thorough study might afford a better insight into the nature of the tumor, and into its exact localization, and the question of its possible removal considered.

The status did not alter any immediately following removal, the history was amplified by a complete urinary examination which was negative. Wassermann blood and spinal fluid were negative. There were no morphological elements in the spinal fluid. Blood showed no eosinophilia. Examination of the fundus by Dr. Duane showed a moderately pale disc slight enlargement of the veins: in his opinion no marked involvement of the disc. Left eye; no limitation of visual fields; no hemianopsia. Right eye totally blind.

The patient gradually became more somnolent, and sleeps a great deal in the daytime. She complains of being awake most of the night. She has become somewhat peevish and querulous. The bowels are costive and she has difficulty in starting her urine. There was no change in her condition for the first three days—then a slight facial palsy appeared on the left side which involved all three branches.

On December 7 (consultation Dr. Dana) the patient had developed a complete mild left hemiplegia, with some hemianesthesia. The chemosis of the left eye is very marked and there is some exophthalmus of that eye. She has ptosis of both sides. There is distinct hebetude, out of which patient can be aroused. Patient is considerably disoriented as to place for some time after she awakens. She lies as though in a dream.

During the week the eyesight gradually failed in the left eye, and the patient became totally blind. She has also begun to hallucinate: says "a small boy and a girl came into her room in the night—the girl had brown bows on her hair, she was ten years old." "I had the cutest little baby boy," etc., showing a dream-like delirium of fact and fancy. She has also commenced to have involuntary urination. Also has dreamy illusions of hearing. "I thought all the little children were taught to hate me; the noise they made in the hall last night. I wish I knew what that bell was ringing for" (Institute is located in the neighborhood of a fire engine station). Often calls for members of her family.

The week following showed no marked change. The restlessness and dreamy delirium continued, with many free and clear intervals. "I want my shoes and stockings, and want to lie on a low bed." "I am afraid my face will catch fire and burn" (influence of fire engine). Involuntary urination continues. No complaint about headaches. Pain in right leg. This week a beginning chemosis of the right eye shows itself, which has increased throughout the week. Involuntary defecation began. Stools examined for ova with negative results.

Throughout the month of December the condition of the patient remained as described. Towards the latter part of the month it was noted that the hearing on the left side was not as acute as formerly. The movements of the tongue are not as free as formerly. The exophthalmus is more marked in the left side and the pressure of the left bulb is more than that of the right. Chemosis of both conjunctivæ very marked. No mastoid tenderness. Faucial pillars on expiration pull up to left side. Mild delirium is interspersed with clear intervals. "A little dog is on my bed. He is gnawing my arm for a bone."

Eye examination by Dr. Holden on December 31 shows chemosis of each bulbar conjunctiva. Right corneal sensibility normal; left cornea anesthetic and infiltrated at inferior margin; lids not closing properly. Mobility entirely wanting. Pupils dilated, $l > r$, round; no light or convergence reaction. Optic discs diffusely pale, retinal arteries small, no venous engorgement.

During January the mental picture remained the same. Hardly a day would go by without there being periods of confusion, and also periods of clearness. Still says "there are dogs in my bed." "Some men came into my room to take me away." "I have a broken glass in my mouth." Refuses nourishment at times, "A dog has been eating out of the plate." "The food is poisoned." Is easily excited. There is some return of power in the paralyzed left hand and leg and patient feels more distinctly on that side.

About the middle of the month a softish rounded mass appeared to the left side of the middle line of the sacral region. This became slightly larger, about one and one half inches across, and elevated three eighths of an inch. Is beneath the skin and shows no inflammatory signs. A peculiar white fluid found oozing from both breasts. The ptosis of the right eyelid gradually cleared up, and there is some movement of the right eye both downward and inward. Slight mobility of left pupil when patient is told to look across room and then at her own nose. Facial palsy persists.

About January 20 the patient commenced to note a loss of sensibility in both lower extremities. Feels light touch, but is unable to locate well, and cannot distinguish between head and point of pin. There is evident loss of power in right leg also. She still has involuntary urination but is aware of it. Involuntary defecation has been absent for some time. There is an indication of another swelling beneath the skin over the spine in the mid-dorsal region. The mental state was better in the latter part of January. She complains daily of there being a "cat in the room, playing with her hair," etc. Disorientation at times profound. Does not know she is in bed. Occasional attacks of vomiting. Involvement of motor fifth nerve. About the end of January she had hallucinations of smell--"I do smell something, I think it is this towel; no it smells like sulphur or matches. That awful smell comes from this corner of the floor. May be the smell is that cigar the doctor is smoking" (no smoking in building). There is also some loss of olfactory perceptions. Patient complains of a tight band about the chest.

During February all of her symptoms progressed. The paraplegia became more pronounced; the sensory demarcation being about four inches above the umbilicus. Below this point there is total loss of all forms of sensibility. The knee jerks remain lost. There is a Babinski

on the left side. The left-sided hemiplegia persists with slight improvement of the left arm. Involuntary urination and defecation. The mental state has been clearer in general. Her orientation for time and place is better. Still somnolent. Some swelling at lower dorsal level. This was aspirated, but the material obtained was negative. The tumor has a springy consistence like a deep cold abscess. The chemosis of the right eye, after having almost disappeared, has commenced to be more prominent. There are beginning trophic disturbances of the skin of the foot.

March: Patient commenced to bleed from the right nostril. This is followed by a more or less persistent blood stained discharge. This discharge continued until death. The chemosis in right eye very marked. Left hemiplegia and paraplegia pronounced. There is beginning atrophy of the tongue on the right side. The skin of the heels and ankles blisters easily. The heart is commencing to beat irregularly; the pulse is soft and compressible: 72. Mentally clearer, but towards end of month restless and confused at times. Pain over the heart region.

March 31: Patient after a restless period, with incessant talking, became unconscious at 2 A. M., and died that evening at 7, the temperature having steadily gone up all day from 100° to 105° F., the pulse from 64 to 148, and respiration from 20 to 44.

Autopsy.[5]—The postmortem examination was confined to the brain. The subject a female, markedly emaciated, showing on external examination an enlargement extending from the tenth to the twelfth dorsal vertebra. The tumor was elastic to the touch and in it the spinous process of vertebræ were absent. There was a second enlargement over the second sacral vertebra of some consistency. The skin over both tumor masses is thinned but not ulcerated.

The examination of the brain on removal of the calvarium shows that the convolutions are markedly flattened. The pial veins are injected and a small amount of edematous fluid is present in the pia arachnoid space. The brain is held down in the base of the skull by a large tumor mass which is extra-dural but through which run the first, second, third, fourth, fifth and sixth cranial nerves. These nerves, after emerging from the brain, run directly into the tumor mass. Some are flattened by pressure and others engulfed by the invading growth. Considerable difficulty is experienced in the removal of brain with tumor attached; and on examination of base of brain there is a large semi-elastic growth which can only be partially removed. The measurements of this extradural growth are $11 \times 6 \times 7$ cm., and section shows a smooth, homogeneous surface through which can be seen, on one side, the internal carotid artery.

This tumor growth extends anteriorly from the frontal lobe just beyond the olfactory bulb to its posterior boundary at the junction of the pons with the medulla; the pyramids and olivary bodies being deformed by pressure. The lateral boundary of the tumor is the space between the temporosphenoidal lobes.

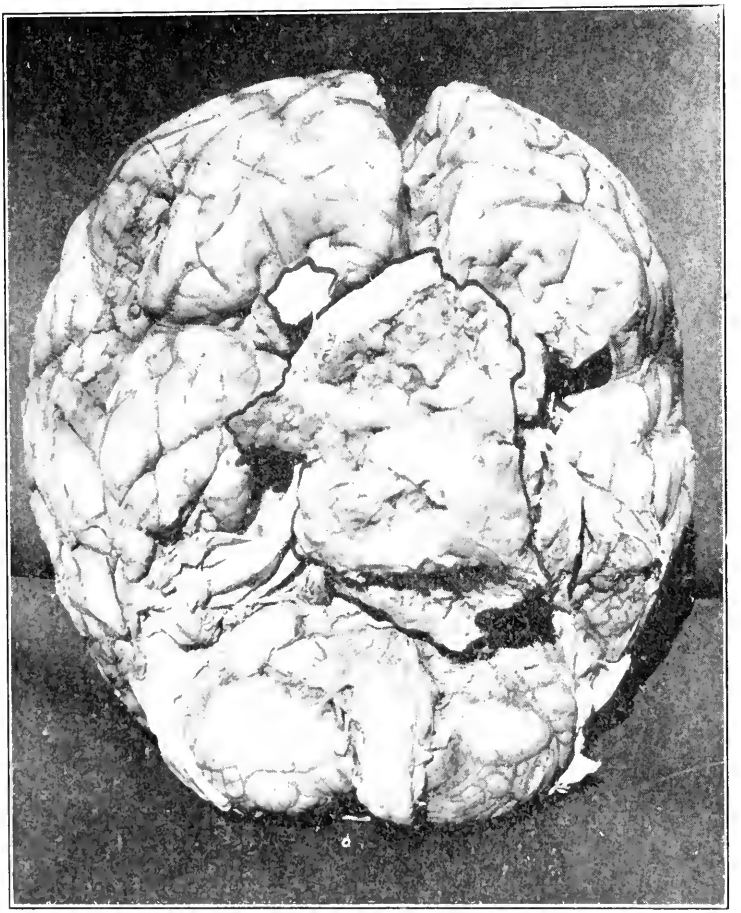
On the removal of the tumor from the base of the brain one sees enormous distortion and flattening of the brain by tumor growth. The basal convolutions are but faintly visible. The anterior orbital, postorbital, inferior frontal, optic commissure, pituitary body, crura cerebri, and pons varolii are markedly distorted so that the normal architecture of the base of the brain is lost.

The examination of the cranial nerves is as follows: The first or olfactory nerves are compressed by encroachment of tumor growth so that examination shows them as exceedingly thin filaments. The optic commissure and nerves can be traced from the brain origin, but when they penetrate the dura they run directly into the tumor mass and can no longer be distinguished.

The third or motor oculi is displaced laterally by pressure, enters the dura from the brain and is then lost in the tumor mass.

[5] Made by Dr. J. H. Larkin.

The fourth nerve is seen arising from the brain but is visibly stretched and compressed by extension of growth into the temporo-sphenoidal lobe. It enters the dura and then is lost in the great tumor mass.



Mrs. Sanders. Malignant Chordoma.

The fifth nerves are compressed and flattened and run into the tumor mass where they no longer can be traced.

The sixth nerve, the abducens, is compressed by the tumor mass into a fine, thin strand.

Part of the fibers of the seventh, or facial, run along the outer side of the dura but are not included in tumor growth.

On removal of the tumor from its nerve attachment, a large cavity at the base of the brain remains, which, by pressure on surrounding parts, deforms and alters the normal structure. The normal fissures and convolutions are flattened, the pituitary body no longer found, the crura cerebri

flattened and the body of the pons varolii distorted by pressure. This deformity reached to the olivary bodies and medulla oblongata.

The examination of the base of the skull shows extensive necrosis by invasion of tumor growth. Both orbital plates of frontal bone, the crista galli and cribriform plate of ethmoid, the body and lesser wing of sphenoid and half of the basilar process of occipital bone are entirely gone, leaving a narrow rim of occipital bone to preserve the outlines of the foramen magnum. The wide extension of the tumor growth has filled up the surrounding cavities. The tumor has grown down through the cribriform plate of ethmoid and the nares are filled with tumor tissue. The perpendicular plate of ethmoid, the vomer and turbinated bones are entirely gone. The sphenoidal sinuses are replaced by tumor growth, this growth extending into the antrum of Highmore—which is completely filled by tumor tissue.

Histological Examination.—Portions of the tumor were removed and examined histologically. The ordinary stains, *viz.*: hematoxylin and eosin and the special nerve stains, for the purpose of identifying nerve structure, being used.

The microscopical detail of the tissue is at first not unlike cartilage in some places and mucous tissue in others. Rows of cells imbedded in a homogeneous matrix, which stain deep blue with hematoxylin dyes prevail, the microscopic picture in places looking somewhat like cartilage tissue. But in the more developed parts the tissue is identical with the tissue of the notochord. These cells contain a great many vacuoles some of which take light blue stain. The basement substance contains many spheroidal open spaces which are undoubtedly due to the coalescence of the vacuolated cells. In places these are large enough to make microscopical cysts, filled, and in places, traversed by light blue strands. In the more condensed part of the tumor cell masses assume an alveolar type but this is not preserved as a whole: the cells wandering away and found singly and in small clumps imbedded in a light blue hyaline, staining matrix. The type is a large vesiculated cell, the protoplasm containing many vacuoles—others being slightly granular. The nucleus is large and vesicular and stains deeply with hematoxylin dyes. The tumor is devoid of any great number of blood vessels, these being seen for the most part in some of the denser fibrous tissue strands. Areas of necrosis, derived from the broken-down tumor tissue are seen in many sections. One is able to trace the development of the tumor from the many various cell pictures distributed in section, to that type of tissue which is characteristic of the notochord tumors. (See colored plate.)

Summary.—Looking backward the picture is very significant. A young woman, 36 years of age, with negative heredity, no history of infection, and in previous good health, suddenly develops sixth nerve palsy on the left side. She then has headache and pains in the region of the left trigeminus, then develops total internal and external ophthalmoplegia and signs of pressure on the optic tracts with blindness first in one eye and then in the other, with marked bulbar chemosis of the left eye. There is a loss of tendon reflexes of both lower extremities.

This is the situation after four months when the first complete examination was made that indicated the presence of a foreign body pressing upon the structures at the base of the brain. There is gradually increasing somnolence, with confusion and

dreamy delirium; then a left facial palsy comes in and a total left hemiplegia with hemianesthesia within the next month.

Fifth nerve palsy supervenes, both sensory and motor of the left side, and there is a gradually developing paraplegia, with total loss of all functions. Involuntary urination and defecation are constant. To the marked left-sided chemosis there are added an equally persistent right-sided chemosis, and right ptosis, and some slight impairment of hearing. Hallucinations of sight, of hearing and finally of smell develop. Vomiting is irregularly present throughout. Finally there is a sanguineous discharge from the right nostril, and after eight months of patient and terrible suffering the patient dies exhausted.

The autopsy, of the brain only, was performed the same evening and showed a remarkable tumor formation, which at first was taken to be a degenerated myosarcoma, but which, on microscopical examination proved to be a chordoma.

In reality chordomata are not rare tumors. Ribbert and Steiner in 1894 report on 12 cases, none of which were of particular neurological interest. Ribbert makes the statement that 1 in 200 tumors are chordomata, but malignant chordomata are extremely rare. Death from malignant chordomata, confirmed by autopsy, has been reported only by Grahl, Fischer and Steiner, Seiffer, and Frenkel and Bassal.

A summary of all the cases reported, with the neurological findings, is here appended, since there is no available English nor neurological literature upon the subject.

Luscha[6] is the first to have mentioned the presence of a soft lobulated mass, which entered the cranial cavity at the sella turcica, and penetrated the dura mater, while Virchow[7] first described these tumors, giving the name ecchondrosis prolifera spheno-occipitalis, under which head they are found in the earlier literature.

He described them as a cartilaginous production, with proliferation of the basement substance, and vesicular transformation of the cells. He called attention to the embryonal character of the cells, but the real pathological character of the tumor tissue was advanced first by Müller[8] but not proven until Ribbert[9] took up

[6] Virch. Archiv, 1856, Vol. 9, p. 325.
[7] Entwickelung des Schädelgrundes, 1857.
[8] Zeit. f. rat. Med., 2, 1858, p. 222.
[9] Cent. f. all. Path., 5, 1894, p. 457.

the question, and supported Müller's idea of their chordal nature. This same investigator established the point experimentally.[10] Following Virchow, Luschka,[11] Hasse[12] and Zenker[13] described cases. They were of interest solely from the pathological standpoint.

The first reported case, causing neurological symptoms, is that of Klebs. Here the tumor was small, size of a cherry, as had been most of those described by the previous authors.

Klebs:[14] The patient, a healthy man of middle age, died after a series of tetanic convulsions. On autopsy a chordoma was found obliterating the basilar artery. There were no symptoms of pontine involvement and the author was not inclined to accept the basilar occlusion as causative of the tetanic spasms. The tumor was soft and gelatinous, and had the characters of an ecchondrosis sphenoccipitalis as originally described by Virchow (the illustration reproduced here).

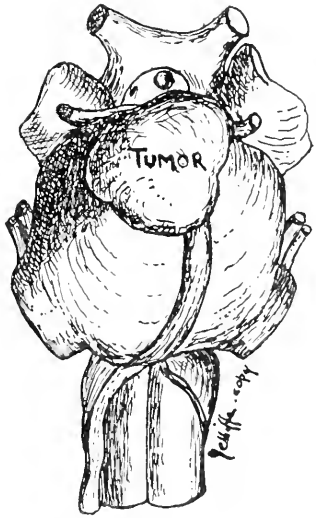


FIG. 3. Copy of picture of chordoma reported by Klebs.

Nebelthau[15] reports three cases also, of little neurological interest.

Grahl:[16] This is the first case with marked neurological

[10] Congress f. inn. Med., 13, 1895, p. 462.
[11] Virch. Archiv, 11, 1857, p. 8.
[12] Virch. Arch., 11, 1857, p. 355.
[13] Virch. Arch., 11, 1857, p. 108.
[14] Ein Fall von Ecchondrosis Spheno-occipitalis amylacea. Virch. Archiv, 31, 1864, p. 396.
[15] Inaug. Dissert., Marburg, 1897.
[16] Inaug. Dissert., Göttingen, 1903. Original obtained after publication of our paper in the Zeits. f. d. gesam. Neur. u. Psych., Vol. 5, 1911, p. 590.

symptoms. It is of further interest as possibly being the first on record as causing death by reason of its malignancy and pressure upon the cerebral structures.

This patient was a single woman, 51 years of age, whose mother was psychically abnormal, and had double vision. The patient complained of having had headache for about three and one half to four years. Syphilis was denied, coitus admitted. For the past three years she had a steadily increasing convergent strabismus of the left eye, with double vision and pressure in the globe. Examination on entrance into Göttingen Clinic in June, 1902, showed only a palsy of the left abducens, with secondary contraction of the rectus internus. In August, 1903, eighteen months later, she showed sensibility to percussion of the occipital region, movements of muscles of forehead lost on left side, the right pupil reacted promptly to light and accommodation. The left was widely dilated and absolutely immobile. Total left facial palsy. Left eye could be moved outwards and under only. Slight tongue tremor, and slight ataxia of upper extremity, with slight diminished position sense of upper extremities. Vision left eye 1/10.

Taken into the Clinic, it was found, in September, that in addition to these symptoms there was some deafness of the left ear, of central origin, some slight intention tremor. The left eye showed marked conjunctivitis, with pericorneal injection.

October, occasional vomiting, difficulty in eating. In November the right eye became involved. Headache marked. December, eating and speaking difficult. Hard to swallow. Pulse 120. Changeable mood. Tongue markedly to left.

Patient fell out of bed, cannot walk. Swallowing has become impossible, the food regurgitating through the nose. Patient became restless, threw herself from side to side in the bed. Speech had grown unrecognizable, and patient died shortly after the new year.

The post mortem showed a tumor of the base of the skull, consisting of a number of knobs varying from the size of a pea to that of a cherry; they came from the sella turcica, which was elastic to the touch, of a grayish white color, and grown fast to the base of the skull.

There was compression of the contiguous nerves at the base, distortion and flattening of the pons and the medulla. The tumor rose from the sella turcica, with a pedicle about 4 cm. long, and showed no demarcation from the bony tissues at its origin. It had spread out forward and back like a mushroom. The cross-section of the tumor was 2–3½ cm. On cross-section the tumor is divided into oval or round sections by grayish fibrous strand-like connective tissues; these compartments contain soft, gelationous material with numerous interspersed hemorrhages. Hard, bony, or cartilaginous structures were not found. Only at the very base do any bony particles enter the stalk. The entire tumor was covered with the dura.

Microscopically the tumor showed the typical picture of a chordoma.

Although Grahl speaks of the large size of this tumor, it was much smaller than the one found by us.

Seiffer:[17] In the May 1, 1905, meeting of the Berlin Society for Neurology and Psychiatry W. Seiffer reports a case of a rare form of tumor of the base which had been observed in the Charité. The patient was a man of 33 years of age who had complained from time to time of severe pains at the back of the head. He then had a gradually increasing weakness of the left side of the body with now and then vomiting and dizziness. Investigation showed the general picture of a left-sided spastic hemiparesis without other symptoms, no choked discs. During the time

[17] Neur. Centbltt., 24, 1905, p. 460.

of observation the headaches increased and the patient complained much of pain in the back of the neck with sensitiveness and stiffness on active and passive movements. He died in collapse without other symptoms. Autopsy showed a soft tumor about the foramen magnum, the size of a horse chestnut, which had the histological structure of a chordoma.

Seiffer ascribed the fatal result to the pressure.

Fischer and Steiner:[18] This case is the third case reported as giving a fatal termination. The patient was a student sixteen and one half years of age, who for six months had suffered slight discomfort and pain on moving the neck. These pains gradually increased in severity until they became unbearable. Physical examination showed a well-nourished youth, with no appreciable disturbance in his gait. The head was freely movable forward, but movement to the side and backwards caused pain. The spine was tender to pressure in the cervical region. The cranial nerves were intact, but the left arm and left leg were both somewhat weak. The left hand showed definite claw position, and contractures typically of the extensor muscles. Sensibility was somewhat diminished. The tendon reflexes were exaggerated on the left side and there was a left Babinski. A diagnosis of tuberculosis of the cervical vertebræ was made, but for external reasons no operative interference took place. Seven weeks later both legs were seen to be paralyzed, the left more than the right. Tactile sensibility was absent in the left arm. Ankle clonus was present on both sides. The head could hardly be raised from the pillow and had a tendency to fall to the left. At this time the facials were intact but the left eye diverged to the left and the tongue was protruded to the left. There was double choked disc, and the left pupil was immobile to light. Hearing was intact.

In the course of the following days there were transitory pains in the head and then difficulty in swallowing and deepened breathing. Retention of urine. There was never any vomiting. Pulse 100. Intelligence absolutely intact. The diagnosis of a new growth of the upper cervical vertebræ, with cerebral metastases, was then made.

The condition remained the same with slight transitory headaches and without any increase in the other symptoms until ten days later, when, fully conscious, as he was being fed he cried "I am dying," and actually died.

The autopsy showed an extensive degenerative condition, due to a chordoma. The rim of the foramen margin was entirely destroyed posteriorly, to the level of the second cervical vertebra by a chalky mass, apparently taking its origin from the odontoid process of this bone. The spinal cord here was of the dimension of a lead pencil and the medulla was squeezed flat. The abducens of the left side was included in the tumor mass. The hypoglossus was also apparently involved.

The special symptoms are explained on the ground of the involvement of the cranial nerves, the papillitis to pressure, whereas a reflex for pupillary movements is assumed to lie in the upper cervical cord.[19]

A diagnosis of chondrofibroma was at first made, later corrected to chordoma (p. 117); the propriety of terming it a chordosarcoma, by reason of its malignancy, is raised. The patient furnished no evidence, clinically or pathologically, of any metastases.

[18] Ueber ein malignes Chordom der Schädel-ruckgratsholen, Beitr. z. path. Anat., 40, 1906, p. 109.

[19] Tumor demonstrated. Allge. Z. f. P., 162, 243.

Fischer suggests this observation of his to be the first case of a malignant chordoma. In this sense then this tumor takes on increased interest—theoretically Ribbert has claimed its possible malignancy. Here is a type of atavism which has led to a malignant tumor.[20]

Linck:[21] This case is of considerable interest pathologically, but of less value from the neurological point of view.

Patient was a man of middle age who came into the Königsberg polyclinic complaining of severe earache, with a discharge from the ear. One eye showed a slight palsy which was said to have been present for some time. Examination of the ear showed a perforated drum, much pus and a mastoid painful on pressure. Examination of the nasopharynx revealed on the left side posteriorly a soft fluctuating tumor, the size of a pigeon's egg. Incision into the mastoid revealed pus. Later study of the tumor mass in the nasopharynx showed it to be a chordoma.

Attention was then directed to an increasing huskiness in the patient's voice, and laryngeal examination showed a total left-sided recurrent palsy, and then there developed a slight facial asymmetry due to left facial paresis. This led to a more complete neurological status with the following results.

Cranial Nerves.

I. Olfactory: Slightly diminished.

II. Optic: Both sides intact, no trace of choked disc.

III, IV. Normal. Pupils medium wide, reacting promptly and equally to light and accommodation.

VI. Left side total palsy.

V. Trigeminus. Left corneal reflex weaker than right; tactile sensibility of the cheeks normal. Mucous membrane inside of cheeks less sensitive on the left side. Pain sense unaltered. Motor fifth undisturbed.

VII. Facial. At rest, the left palpebral fissure smaller than the right. Left nasolabial fold flattened. Mimetic movements show slight paresis, the left eye facial distribution.

VIII. Hearing normal and Rinné positive. Weber positive. No vertigo. No nystagmus.

IX, X, XI, XII. Left faucial pillar flat, and velum drawn to left. Swallowing intact. Sensibility posterior pharyngeal wall diminished; also diminution taste in posterior part of tongue. Taste in anterior part of tongue normal. Heart normal, voice high and rough; left recurrent palsy. Left half of tongue atrophic; thin, folded, tongue projects to left. Left shoulder hangs somewhat. Scapula forward; other branches of accessorius involved.

Upper extremities, trunk and lower extremities normal.

Frenkel and Bassal:[22] J. C., 30 years of age, farmer, with negative hereditary or antecedent history, entered the clinic for diseases of the eye in May, 1910, having suffered for a year from headache, located particularly in the frontal region. It was mostly nocturnal, but from March preceding had been continuous day and night. Since April, 1909, he had had attacks of vomiting, which came on every day at the time of rising, and which continued up to the end of the year 1909. In the meantime he had a diplopia which became marked since November by ptosis of the left

[20] See Ribbert, Beiträge zur Entstehung der Geschwülste, Chap. V, Bonn, 1906.

[21] Alfred Linck, Chordoma malignum. Ein Beitrag zur Kenntniss der Geschwülste an der Schädelbasis. Beitrage z. path. Anat., 46, 1909, p. 573.

[22] Frenkel and Bassal, Sur un cas de Chordome Malin spheno-occipital. Arch. de Med. Exp. et d'Anat. Path., 22, 1910, p. 703.

eyelid. He had numerous vertigoes, but had never fallen and had never had epileptiform attacks. He came to the clinic for failing eyesight, a fairly robust man, not apparently ill, but showing a certain torpor or indifference to everything going on about him.

Neurological examination showed a ptosis of the left side and a right facial paralysis, not accompanied by lagophthalmia. No loss of eye movements of the right side. The right pupil was smaller than the left. Both

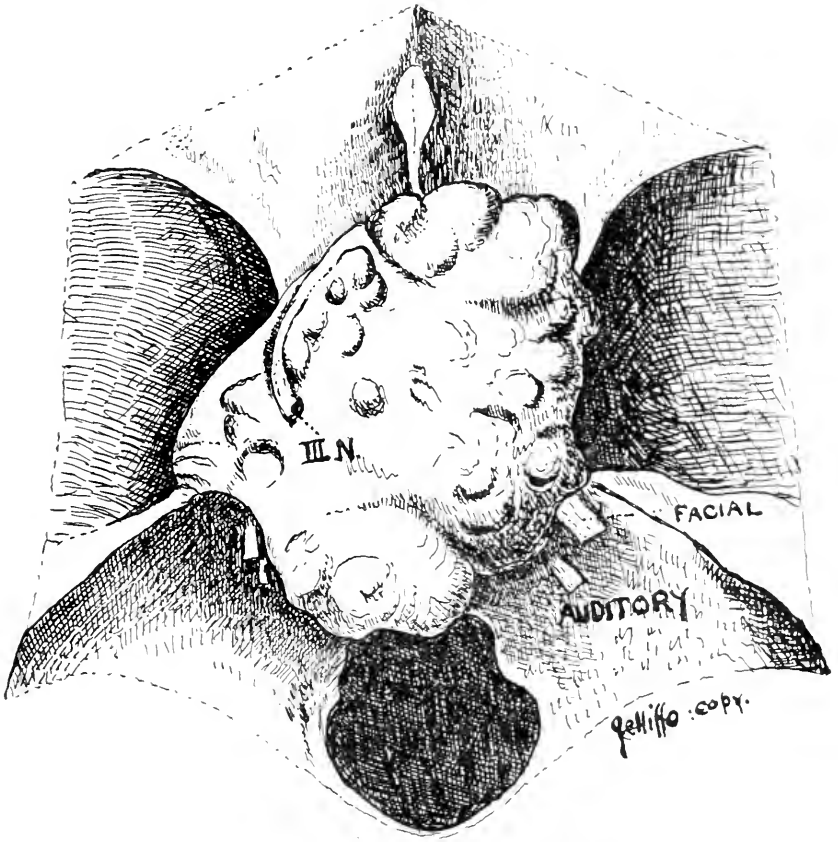


FIG. 4. Copy of illustration of chordoma of Frenkel and Bassal.

consensual and light reflexes were abolished on the right side. Ophthalmoscopic examination showed slight papillary edema with dilatation of the veins. Sight diminished. O D-v. one fourth, fields not tested.

Left Eye.—On raising the eyelid the left eye was seen to be relatively immobile, and slightly turned outward.

Systematic examination showed paralyses of the II, III, IV, and V pairs of the cranial nerves. Visual perception to light absent. The paralysis of the III was complete. All ocular movements were abolished. The pupil was in moderate mydriasis, and immobile to all stimuli, including convergence. There was anesthesia over the distribution of the ophthalmic

branch of the left fifth, the left cornea was insensitive, also the conjunctiva, and the skin of the forehead to temperature and to touch. No trophic disturbances. Ocular tonus each side normal. The fundus on this side resembled that of the other.

There was a slight palsy of the inferior branches of the right facial, the superior branches being intact. There was no involvement of taste, smell, or hearing. There were no motor sensory disturbances of the extremities. The patellar reflexes were slightly exaggerated; no vasomotor nor trophic disturbances.

Lumbar puncture taken in May, 1910, was negative; the same evening he suffered from headaches, slept badly and vomited frequently. From this time on he grew rapidly worse. The pulse, which had been 80, mounted to 130; on the 25th of May vomiting was persistent. He had trouble in swallowing. The two pupils became equal, and did not react to light. Partial ptosis of the lid had developed, and paralysis of the right third occurred, the right cornea was insensitive, and vision abolished on this side. The day following the patient became comatose, and died with Cheyne-Stokes respiration.

Autopsy showed a chordoma situated as seen in the illustrations which accompanied the original paper (here reproduced by copy). No lesion of the brain proper was observable. The tumor was covered by the dura mater. It had pressed upon the optic nerves, flattening them, particularly the left, involved both third nerves. It had destroyed the sella turcica, and the ethmoidal sinuses, and penetrated into both nasal fossæ (compare with present case). There were no metastases noted.

Spinal Chordomata.—These have also been reported, but it is not our intention to do more than call attention to the cases of Mazzia, Feldmann and of Henning, as bearing upon the probable metastases found in our case.

Hennig[23] has given a complete résumé of sacral chordomas.

O. Mazzia[24] described a case from the sacral region in a 44-year-old farmer: operated tumor of sacral region. There were no symptoms.

Feldmann[25] describes a sacral chordoma in a woman of 46 years. It was operated on and one year later showed no return.

That the lumps felt in our patient were spinal metastases we feel certain, but as no sections were taken it cannot be held to be definite.

[23] Ueber Congenitale echte Sacraltumoren. Cent. f. all. P. u. Anat., 28, 1900, p. 593.

[24] Chordoma of Sacral region. Cent. f. Path., 21, 1910. No. 17, p. 167.

[25] Chordoma ossis sacra. Ziegl. Beith., 48, 1910.

TUMOR INVOLVING THE BASE AND SUBSTANCE OF THE LEFT TEMPORAL LOBE[1]

By F. X. Dercum, M.D.

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The following case, both because of the location of the tumor and because of the character of the aphasia present is of very considerable interest. The facts of the family and personal histories were obtained from the wife: A. B. M., male, white, aged 45, married, ticket agent, was admitted to the Jefferson Hospital, March 17, 1908.

The family history is practically negative. The father died at an advanced age. It is probable that he suffered from paralysis agitans. The mother died at the age of seventy-five from arthritis deformans. The patient had two brothers, one of whom died at forty-one of Bright's disease; the other, aged forty-eight, is still living and in good health. Three sisters are living and in good health. Several brothers and sisters died in infancy. There is no history of cardiac, pulmonary or malignant disease, save that a maternal grandmother and a maternal aunt died of tuberculosis.

The personal history is relatively unimportant. Only one disease of childhood is recalled, namely measles. Alcohol and tobacco have been used moderately. Coffee has been apparently used to excess. There has never been any venereal infection.

The patient has been married twice; he had two children by the first marriage and a stillborn child by the second marriage.

His present illness it is claimed, began about one month before his admission to the hospital. It was said that the patient had "chills," lasting about an hour at a time and occurring at irregular intervals, sometimes days apart. Just what the character of these chills was, it is impossible to say. Possibly they were "nervous," *i. e.*, hysterical in origin; possibly they were convulsive in character; they were not accompanied or followed by fever. The patient's general condition remained good save that he complained of severe headache which was referred to the left side of the head. His bowels also were much constipated. He was also very nervous, was worried about his work and was restless. For two weeks before his admission to the hospital,

[1] Read by title at the thirty-seventh annual meeting of the American Neurological Association, May 11, 12 and 13, 1911.

his sleep had been much disturbed. During the night he would constantly change from one side of the bed to the other, or would change to another bed or room, or walk the floor. The sleep disturbance appears to have been very marked. There was no history of vomiting.

Ordinarily he appears to have been of a talkative and vivacious disposition but for a week past, his wife noticed that he has become very quiet. He seemed anxious to talk, but was not able to find the words and finally ceased to make the effort. He seemed to know what he wished to say, but instead used, as his wife expressed it, some nonsensical words or he constructed his sentences illogically, transposed his words or used the wrong words. He seemed at first to have had some realization of his condition, for he asked his wife if she was afraid of him because of his foolishness. During his examination by me, he looked to his wife to help him out or to tell his story for him. His voice often became so low and mumbling that words could not be made out. Formerly he read a great deal but since his illness he will pick up a newspaper, for instance, look at it but lay it down again without reading. He is naturally a good penman but he has not written or attempted to write for some time. At the time of admission he seemed to suffer a great deal from pain in and about the left eye and left side of face and head. His wife said that he does not always know just where he is.

Physical Examination.—The patient is a well-developed adult male, in a good state of nutrition. The general visceral examination is negative.

The gait and station are normal. He stands well upon either leg alone and the grip of either hand is normal. The face when at rest presents no marked inequalities. However, when he is asked to show his teeth, the right angle of the mouth is not retracted as well as the left while the naso-labial fold on the right side is shallower than the left. The tongue deviates toward the right. There is no tremor of the tongue or lips. The left palpebral fissure also is somewhat narrower than the right. The left upper lid is distinctly a little lower than the right. The tendon reflexes are everywhere normal. There is no ankle clonus. There is no Babinski sign. There are apparently no sensory losses. The pupils are equal, react to light and convergence and to accommodation. However, reaction to light and convergence appears to be somewhat restricted. Dr. Sweet noted that the pupils reacted only one mm. to direct light and only one mm. to convergence. An examination of the fundus failed to reveal any optic neuritis. Arteries and veins were normal and there were no signs of pressure. The fields could not be accurately studied because of the mental condition of the patient; there was no hemianopsia. It was impossible to determine the color perception.

Mentally the patient is markedly dull.

Examination of the sense of smell and of the sense of taste is unsatisfactory but it did not appear that these were much disturbed.

The statements of the wife in regard to the patient's speech were abundantly confirmed during the examination.

In reply to questions as to how he feels and of what he complains, he gives unintelligible answers, but frequently places his left hand upon the left side of his head. When a number of objects are placed before him and one of the objects is named, he sometimes picks up the object named; at other times he fails. When asked to name an object placed before him, he at times names the object correctly and at other times fails.

He is able to execute very simple spoken instructions such as "put out your tongue," "shut your eyes," but frequently fails when he is asked to perform other movements, such as "place your hand upon your head" or "place your hand upon your knee." Instructions containing two or three factors he invariably fails to execute. He is able to repeat quite a number of simple words, though if the words contain several syllables, he is apt to fail. His enunciation of the words that he repeats is clear and distinct. He can read aloud simple words whether in written or printed characters such as "head," "hand," "knife," "spoon." He is unable, however, to carry out written instructions even when these are very simple. In this respect he fails even more completely than in response to spoken instructions.

A pen having been placed in his hand—he is right-handed—he is asked to write something voluntarily. He produces something which is illegible save that the letters y, u, and possibly o can be recognized and we are told by his wife that he means to have written the phrase, "How are you sir?" (How he has failed, the accompanying specimen of his writing shows.) Asked

Fig. 1. Specimen of handwriting on August 7, 1907.

to write at dictation the words, "I live in Collingswood," his failure is more complete, indeed it is absolute. Asked to copy the phrase "Camden is a large city," he makes a series of unintelligible marks. (See Figs. 1 and 2.)

A certain degree of apraxia is also revealed in his handling of common objects placed before him. To what degree if any astereognosis may enter into this factor, it is impossible to determine by reason of his aphasia.

The general mental condition of the patient was such as at first to suggest that he was somewhat demented. This condition

became more pronounced under observation. For instance four days after his admission to the hospital, he wandered about the ward in the jacket of his pajamas without his drawers. Upon another occasion he tried to put his pajama jacket on his feet. Finally he managed to get his pants on, but put his coat on backward. At another time he stripped himself naked in the ward

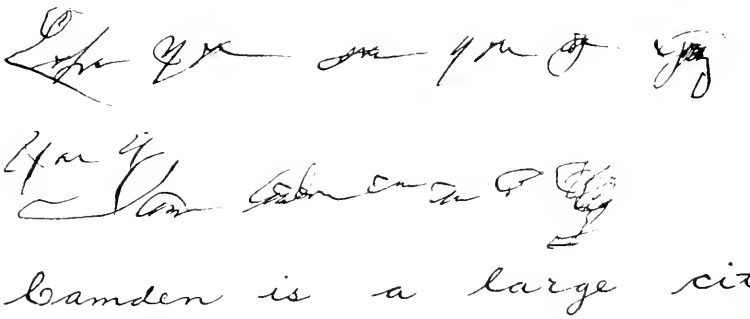

FIG. 2. *A*, Voluntary writing; *B*, Writing at dictation; *C*, Attempt to copy. March 17, 1908.

and then tried again to dress. He put on his pajama pants first, then put on his coat and then put on his shirt over his coat. Upon another occasion he was caught apparently trying to get out of the window.

On March 24, he was evidently actively hallucinatory, apparently hearing voices. At another time he uttered the words, "smoke," "fire" and tried to get out of his room. By March 26, he had become very heavy and somnolent and difficult to rouse. His eyes were open but he could not be made to speak and failed to understand the instruction to put out his tongue. His mind continued in this condition until March 28 when he could no longer be roused at all.

Examined in the morning, it was found that his right pupil was two mm., his left four mm. Both reacted to light. Respiration and temperature were normal, but he was resistive to movements, when it was attempted to handle him. He frequently passed his left hand over the left side of his head, as indeed he had done many times before. From time to time he moved his extremities as though voluntarily. At another time it was noted that his fists were clinched and there was a slight suggestion as of a clonic convulsion of the right hand. Finally his pupils became widely dilated, his pulse weaker, respiration more and more frequent and less deep, he soon became profoundly cyanotic, did not respond to stimulation and died.

The autopsy revealed a tumor of the left temporal lobe. Subsequent examination revealed it to be a sarcoma. At the base

FIG. 3. Horizontal section through left temporal lobe at largest diameter of tumor. The section passes through the anterior part of first temporal, middle part of second temporal and posterior portion of third temporal convolutions.

it had slightly involved the lobulus fusiformis or sub-collateral gyrus. It extended upward well into the substance of the temporal lobe and could readily be felt through the fossa Sylvii. It was, save for a small area at the base, entirely subcortical. It had involved a small area of the cortex of the lobulus fusiformis in the lowermost portion of the latter; it had involved the subcortical tissue of the third, second and to a less extent of the first temporal convolution. It had thus involved to a large degree the subcortical tissue of the temporal lobe. The accompanying drawing gives a fair conception of the size and depth of the growth. It measured in its greatest antero-posterior diameter an inch and a half, in its transverse diameter about an inch and a quarter and extended somewhat less than an inch and a quarter upward into the temporal lobe.

It will be noted that the aphasia present was sensory in type. The patient presented a paraphasia and at times even a jargon aphasia, but the words were clearly enunciated. There was no anarthria. The auditory aphasia, while pronounced, was incomplete as was also the alexia, the patient was able, it will be recalled, now and then to read simple words. Occasionally he would read a word correctly and would pick out the correct object. He had, however, little or no faculty for comprehending any but the simplest verbal instructions and frequently he failed in these. The auditory aphasia was incomplete, the alexia somewhat more pronounced, while the agraphia was practically total.

The chief interest in this case lies, it would appear, not so much in the presence of the paraphasia, not so much in the presence of the sensory aphasia, as in the existence of the agraphia. The agraphia was doubtless dependent upon the alexia and yet the latter, though pronounced, was as already stated, not complete. The second frontal convolution was entirely normal, as was also the angular gyrus. The alexia may itself have been secondary to a primary disturbance of function in the region of Wernicke or, as Marie believes, it may have been due to interference with the inferior longitudinal fasciculus; a lesion of the latter causes a break in the connection between the zone of Wernicke and the visual centers in the occipital lobe; a lesion in the fusiform and lingual lobules encroaching sufficiently upon the subjacent white matter and thus involving the inferior longitudinal fasciculus may, according to this view, cause alexia. If it causes alexia, the same lesion must of necessity cause agraphia. I believe that the agraphia in the present case can be most readily

interpreted by applying the theory of the diaschisis of von Monakow. If we look upon the speech function as a unity, the various parts of which are so closely inter-related that the disturbance of one part means the possible, if not the potential disturbance of other parts, it becomes possible to understand the elision or inhibition of so important a function as that of writing by interference with the inferior longitudinal fasciculus, and this too whether we concede or deny that the angular gyrus is the center for reading.

The fact also that the speech disturbances did not attract attention until between five and six weeks before the death of the patient is interesting and important. This undoubtedly late appearance of symptoms taken together with the location of the tumor makes it very probable that in explaining the aphasia we must take into account a gradual inhibition or elision of function due to an increasing pressure.

DIFFERENTIAL DIAGNOSIS BETWEEN MANIC-DEPRESSIVE PSYCHOSIS AND DEMENTIA PRÆCOX[1]

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The conception of the manic-depressive psychosis as presented by Kraepelin is at present admitted by a large number of psychiatrists. Although as an entity it includes morbid states apparently different and opposite to each other, such as depression and exaltation, it nevertheless finds its raison d'être in certain manifestations which underlie equally either of the two emotional states. First of all *weakened attention* is characteristic of both conditions. While in mania it is the result of an abnormal mobility of ideas, in melancholia it is the result of immobility of thoughts. In the first case the patient is unable to select and coördinate impressions; in the second he cannot tear himself away from images and ideas which develop in himself. The *acceleration* of psychic processes which at first glance are so striking in mania, is in reality confined only to the automatic processes; *association* of ideas is as defective in mania as in melancholia. *Perceptions* are insufficient in both forms: in mania they are fragmentary, incomplete, uncertain; in melancholia they are faulty and form illusions. *Morbid indifference* exists in both conditions: maniac and melancholic individuals equally react to emotional shocks which in normal life produce a certain disturbing effect.

These several phenomena present the fundamental common characteristics of the manic-depressive insanity. As it can be readily seen, psychic *inhibition* is the chief underlying basis. If the presence of flight of ideas, irritability, impulsive activity, accompany one phase of the psychosis, they are only the result of exaltation of the psychic automatism and alter only the aspect

[1] Read at the thirty-seventh annual meeting of the American Neurological Association, May 11, 12 and 13, 1911.

but not the nature of the disease. The same remark can be made with regard to fixed ideas of melancholia. Besides, it has been observed that some symptoms of one phase may combine with some symptoms of the other, as for example, depression or dejection with flight of ideas, mobility of thought with depression; depression with exhibits of anger and impulsiveness; *cheerful* thoughts with psychomotor inhibition.

The final argument in favor of the manic-depressive insanity as an entity is, according to Kraepelin, the fact that with the disappearance of each maniacal outbreak there is always a more or less marked weakness and depression, which ordinarily is considered as a logical state of exhaustion following an agitation, but which in reality is a state of depression characteristic of the manic-depressive psychosis. Moreover a careful investigation will show that maniacal outbreaks are very frequently preceded by a prodromal period characterized by a state of depression more or less marked. It is therefore evident that in Kraepelin's mind mania and melancholia are but states which have a common basis and on this basis according to the cause and to the individual appears either an exaltation, or a depression, or else multiple combinations of symptoms of mania or melancholia. Briefly speaking, if this view of the school of Munich is accepted in toto, our old conception of mania and melancholia as individual and independent mental affections loses its ground.

However, there are highly competent observers, who, admitting the existence of manic-depressive psychosis, cannot with documents on hand reject the existence of a simple or periodic mania, of a simple or periodic melancholia. There are others who cannot accept the psychological arguments made in favor of the new psychosis of Kraepelin, as according to their large clinical experience the new psychiatric entity does not exist, just because it is based on purely psychological deductions.

The field is therefore divided on this interesting subject. It must nevertheless be admitted that however correct Kraepelin's views may be with regard to those mixed forms or to the existence of a great many combinations which can be justly classified as manic-depressive types, it opens a very wide entrance for other forms of mental disorder which heretofore had been considered as separate entities totally differing from the one under

consideration. Indeed when dementia præcox was at its height of investigations and studies by Kraepelin himself, its number went up to 50 per cent. and when the manic-depressive syndrome made its appearance, the former descended to 20 per cent. That manifestations of catatonia are being observed now in the manic-depressive type cannot be doubted (see Wilmann, *Centralblatt f. Nervenheilkunde u. Psych.*, I–VIII, 1907). Certain phenomena observed in the course of dementia præcox remind strikingly of the alternating phenomena of the new psychosis. Stupor with hallucinations, stupor following exhaustion or certain infections may equally be placed in the new group. Some of the writers are apt to go further, as for example, Stransky, who did not hesitate to remove certain forms of paranoia from their old place and include them in the manic-depressive psychosis. It is therefore evident that while the conception of the new psychosis constitutes great progress in psychiatry, for it is indeed in accordance with clinical observations, it has nevertheless created a considerable amount of confusion in our understanding of other psychoses. This remark is particularly applicable to dementia præcox group.

The four cases which I am about to report briefly present an unusual interest from the standpoint of differential diagnosis. A sufficiently long time elapsed (8, 6, 7 and 4 years respectively) to enable me to arrive at a more or less definite opinion as to the nature of the psychosis. The diagnosis presented certain difficulties for a longer or shorter time because of a great variability of the phenomena.

Case I. A young man of 24, Harvard graduate, began to show symptoms of lack of attention while at his work as a clerk in a banking house. At the same time he complained of getting easily tired; he became very irritable and the inability of keeping up his work grew more and more marked. Soon he conceived the idea that he could not live long, that he was undergoing mental deterioration. Asked why he thought so, he could not give an adequate explanation. He was overwhelmed, he said, by this idea which from day to day grew stronger and more deeply seated. He was convinced of the truth of his thoughts. He felt that death was the inevitable outcome. His depression became exceedingly pronounced in as much as at times he expressed the wish of committing suicide. This condition continued for a period of six months during which time the depression would become now and then exceedingly deep. He was actually tor-

tured, he said, by the thought of impending death. Gradually he began to find an explanation for his condition. He deserved, he said, his fate, because when he was younger he allowed himself to be sexually excited by one of his favorite dogs. Every other day he would lock himself in his room with the dog and keep up the act for an hour The dog, he said, was infected with syphilis, and the infection was transmitted to him through the dog's saliva. He in his turn was in constant fear of infecting his parents and sister with whom he lived, also his friends. He actually broke his engagement to a young lady for the same reason. Two months later he began to speak of his parents and sister suffering from syphilis. He was convinced of the truthfulness of their infected condition in which he was the real cause. He deserved punishment, he said. The knowledge of this fact had reached already the authorities and the district attorney was in possession of all documents and testimony of witnesses to this effect. He was only awaiting his (patient's) return to town to begin the trial. The reason he was kept in this city in a sanitarium was to hide him from prosecution. He preferred to go back to his town, face court and get open conviction. A month later he became convinced that his presence at the trial was not at all necessary; that he was tried already and received sentence of capital punishment, as the crime he committed is horrible: he infected a whole community with syphilis and they all are threatened with decay and deterioration. The district attorney, he said, sent detectives after him and they could not find him. He therefore was in constant danger of being detected and imprisoned. Besides, he did not fear death, as he fully deserved it, and all the torture he was undergoing was his just retribution. His depression was at times extreme, so that he would refuse food and could not sleep. Sometimes however he would become brighter, especially after a cheerful and encouraging conversation with me. Soon he became suspicious to every one with whom he came in contact. His attendant and former physician were in conspiracy with me and we all deceived him. I particularly was holding him here for the purpose of improving his general health and then to deliver him to the authorities for capital punishment. His suspicious attitude and even enmity towards us all reached at times very critical moments, as he unhesitatingly told me that if after an investigation he would reach the conclusion that I was in collusion with the district attorney, he would shoot me, although he must acknowledge, he said, that I was helping him considerably in regaining his health.

To sum up, his mental attitude was hopelessness, imminent danger, self-blame, worthlessness and just punishment for an unpardonable sin which he committed several years ago; everybody around him suffers and will suffer all his life through him.

Consequently he must undergo punishment, as he deserves it. Depression is the logical result. Through a process of paradoxical reasoning but logical from his point of view he became suspicious of everybody. Since he is convinced that he must suffer and die and death sentence is actually pronounced, we naturally cannot be sincere if we attempt to dissuade him in regard to his sufferings.

An interesting feature in connection with this delusion is the fact that at no time hallucinations were present. They have been totally absent during the entire course of the disease.

During the very short periods of lesser depression which usually followed an encouraging talk with me, he was able to converse on any subject of general interest; sport, theatre and commercial topics. As to his *emotional faculties,* they were considerably affected. His parents were intensely attached to him and went to enormous sacrifices for his benefit. His only sister was very affectionate towards him. But all the tenderness exhibited by them he met with great coolness and an extraordinary indifference. Their most affectionately written letters were rarely answered by him. He never inquired about them and when a friend would call on him he never volunteered a question about the members of his family. When spoken to about them, he only listened to the remarks, but did not participate in the conversation. Often I would emphasize the attachment of his family to him. He listened and all he would say was, "It is all right, I have nothing against them." At no time did he exhibit exaltation, excitement. He was always depressed and preoccupied by the overwhelming delusion about the imminent danger of death with which he was justly threatened.

For a period of two years the condition remained unchanged. Then he began to improve. The depression became less pronounced, although he still believed in the theory of syphilis transmitted by him to his family. The favorable condition which usually followed an encouraging talk lasted now longer than formerly. During these intervals he became more interested in daily events; he began to read newspapers, went several times to the theatre which he apparently enjoyed. He became more amenable to arguments. His relation to his family however remained unaltered: not the least interest was shown by him in their welfare. At that time his sister to whom he was always very much attached developed pneumonia and her condition became alarming. He knew of it and his indifference was the most striking. He was able to write a good letter, he enjoyed a game of baseball, a good comedy in the theatre. To all appearances he was better mentally and physically. He acknowledged the fact that the former mental torture was decidedly less intense.

The improvement lasted six months. He gradually grew worse again. The former mental anguish with all its intensity

now returned. The same suspicion towards his physician and nurse, the same desire of ending his life and that of others was again observed. Once he evaded the vigilance of his attendant, jumped out of the second story window and fell down on the pavement. At another time he escaped, reached New York, obtained money from a bank with which his father dealt and took a boat to Cuba. There he spent two weeks wandering about the streets, worrying over his future, contemplating ever how to put an end to his sufferings. Finally he returned safe and in spite of his suspicious attitude towards me he again placed himself under my care. This time his anxiety about his future and present became more pronounced: he would spend hours in pacing his room, all agitated, talking about the way in which he is being deceived by everybody around him. He would not hesitate and it would be perfectly justifiable to end the miserable lives of his relatives as well as his own because of the "damnable" disease that he transmitted to them. Since it is an incurable affection, "he prefers their death to life."

The patient's condition remained unchanged for the following year, during which time he suffered considerably from insomnia, showed frequently periods of excitement and the original delusion with all the accompanying details did not alter. He then was taken on a trip to Europe, being well guarded. From Rome, Italy, he wrote me a lengthy letter, full of reproaches and insinuations and still complaining of injustice I have done to him by deceiving him in regard to the trial and his condemnation. His epithets applied to me are too severe to be mentioned. Nevertheless, he says, he thanks me for the considerable friendship I have shown him during the treatment, and in closing he asks for a prescription. However, for the first time since he came under my observation I could observe in his letter marked discrepancies as to past facts and events; his attempts to connect occurrences of the previous year, also to give dates as well as names, were all faulty. Up to the time of his departure, as I mentioned above, his mentality in regard to daily occurrences, except to the theme of his original delusion, was good. Now an immense change took place. An inquiry from his attendants corroborated the conclusion drawn from the letter. The next time I heard from him was from Egypt. An exactly identical letter was written by him.

A year ago he returned home. He ceased to speak of his mental anguish and torture; it was only casually that he would mention them. He appeared to me apathetic, indifferent to his surroundings. He was slow in answering. Although he understood when spoken to, he apparently was not interested in what was said to him. He answered whatever passed through his mind. There was not the least indication of initiative. The *affective faculties*, which were practically involved from the be-

ginning, as could be seen from his indifference towards his relatives, became decidedly weakened. There was no more a sign of fear, or of a wish. This condition apparently developed gradually since he left for abroad. A careful inquiry revealed it to be correct.

The patient improved somewhat again, but the amelioration of the symptoms did not last long. Later he showed the following clinical picture. He was at times much depressed, at others only slightly. But what was striking was the indifference to the surroundings. He apparently could remember past events and comprehended when spoken to. In spite of his education (Harvard graduate) he found no desire for reading. He lay sometimes for hours, looking around and without expression. At times he laughed without cause. He rarely talked voluntarily. When he was reminded of his family, he would only occasionally say "Am glad," but then again fall into indifference. He wrote occasionally, but there was a great deal of emptiness and uninteresting thoughts. Only exceptionally he would mention the former delusion, but apparently the latter was fragmented, broken up. He said he did not want to live, because "there is nothing in life." This sentence would come out suddenly after a long interval. In his answers he stopped thinking, he did not reply to questions immediately. Not a word was mentioned to him about being condemned to death by the authorities, but when questioned in this respect, he said: "It is possible that I will die for having done something." Asked about the transference of syphilitic infection to his relatives, he answers: "Maybe I did it." Such is the present state of my patient's mentality. The disease has been in existence eight years, during which time there was not one period of complete lucidity. As to physical signs, I must say that they have been entirely negative with the exception of increased reflexes. Physically the patient is healthy. It is interesting to observe that in his family history I revealed 3 cases of mental derangement of some kind, but the exact nature of which could not be determined.

Case II. A young woman of 29 presented seven years ago for the first time symptoms of exhaustion upon the least physical or mental exertion. She began to show symptoms of mental depression. She would refuse to be entertained, to be spoken to. She ceased to ask for food. Sitting in a chair for hours was her favorite position. At times she would cry without cause. Asked for a reason of crying, she said she felt that she could not get well and death was inevitable. She could give no explanation of that feeling, but the latter was so overwhelming and the fear of such a termination was so terrifying that she begged everybody to end her life. If this was not done, she said, she would commit suicide. On several occasions she actually attempted to take her life.

This condition was at times accompanied by periods of extreme agitation, so that she had to be restrained. At other times she was observed to be quiet and shedding abundant tears. The depression and mental suffering kept on increasing. Nevertheless when food was offered she took it, when spoken to she answered, and when asked to move about, she would obey. Initiative and volition were however considerably affected. *Affective faculties* were not involved to a very great extent. On hearing bad news she would become somewhat agitated and express surprise and actual regrets for the occurrence. Very good news made her only shrug her shoulders. She suffered considerably from insomnia and when asleep she would suddenly jump up in bed screaming from fright caused evidently by terrifying dreams.

Such was the patient's condition during a period of 2 years. Depression more or less marked with phases of agitation, delusion as to imminent death, occasional attempts at suicide and apparent preservation of intelligence—these were the chief manifestations at that time. Soon a psychic shock intervened. A fire occurred in the vicinity during one night. She witnessed how children and women were carried from the burning houses. She became exceedingly alarmed and from that time on her condition grew gradually worse. The depression changed into an indifference. She refused food. When the latter was placed before her, it might remain untouched for hours. If it was forced into her mouth, she took a few pieces, kept them a long while in her mouth before they were swallowed. At other times the food remained untouched for a couple of hours and then suddenly she would begin to eat very rapidly. When however she was spoken to at that time, she would stop eating. Sometimes she ate very large quantities, sometimes not at all. When she was spoken to, she would not answer, but when coaxed and insisted on she answered one or two words but in the most unintelligible manner. When still insisted on, tears appeared in her eyes. She sat in one position for hours. When told to get up or walk across the room, raised her hand or show her tongue, she resisted considerably. While sitting, she picked her dress with her finger and always the same part of her clothes. Often she was heard to sigh and say "My Lord, my Lord." When she was placed in a certain uncomfortable position, she remained in this position a long time. She apparently understood when spoken to, but she seemed to be unable to react. Her indifference to everything or everybody around her was striking. On one occasion her mother of whom she used to be unusually fond, fell in her presence and fractured her nose; a considerable bleeding followed. Everyone in the room raised alarm, but the patient remained immobile, gazing intently at the mother for several minutes, but then resumed her former attitude. Her memory was apparently not

affected, as when I called to see her once a week, she apparently recognized me and a smile could be noticed on her face.

She also gave the impression of having visual or auditory hallucinations. While sitting immovable she would suddenly look up at the ceiling as if she saw something or else move her eyes rapidly from side to side as if listening to something and then an expression of pain or fear would be observed on her face. This occurred several times in a day and especially in the evening. It was difficult to tell the state of humor of the patient. Most of the time however she appeared in good humor, but she seemed to be so stuporous, not participating in what was going on around her, not uttering a word, not making the least gesture when her relatives approached her, not expressing a single wish. Nevertheless the few words she pronounced permitted at times to conclude that she understood and recognized persons around her.

The condition just described remained unchanged for two years. Gradually she began to improve. The resistance, the stereotyped and negativistic attitude became milder and milder. The patient began to move around voluntarily, to accept food readily and to answer questions more promptly. But the more she showed signs of improvement with regard to her catatonic symptoms, the more enfeeblement of intelligence was noticeable. She could not comprehend well, made mistakes in names of persons and of objects, could not recognize well her sisters and brothers, attempted to eat soup with a knife or fork and meat with a spoon, put salt on ice cream and mustard in soup. She became unclean about her person. Then she commenced to develop delusions of a persecutory character. She believed that her mother put poison in her food and that her sisters wished to strangle her. Hallucinations were present.

Gradually the former catatonic symptoms began to return. One by one the resistance, stereotypy and fixed attitude made their appearance. As she ceased to speak and move about the above manifestations became effaced. Later her condition was typical of catatonia with loss of comprehension and memory unlike the condition in the first attack. Six years elapsed and the outlook appeared to be most unfavorable.

During the entire period of her illness she menstruated twice. Otherwise she presented no abnormal physical signs except sluggish pupillary reactions. The family history reveals that two uncles died in insane asylums.

Case III. A travelling salesman, aged 28, began seven years ago to show signs of depression. For two months he was unable to pursue his occupation. As the parents could not appreciate his condition, they insisted upon his going back on the road to sell goods. He attempted to comply with their wish and he went to Reading. Before he reached that city, he was suddenly

taken with an attack of unconsciousness which lasted 15 minutes. The parents were immediately notified and the patient was brought back to Philadelphia. Since then the mental failure commenced. When I saw him two weeks later, he presented a marked hebetude and an inability to tell where he was. He did not interest himself in what was going on around him. Indifference and indolence were noticeable in his face and from his mannerism. He apparently understood when spoken to. He could solve simple mathematical problems, but when more complex questions were given, he experienced considerable difficulty in answering. He was heard talking to himself and seen gesticulating, as if he had visual or auditory hallucinations. He showed no initiative in acts or words. There was a certain monotony in his actions and a stiffness in his limbs when he walked. He would always walk in the same way and answer in the same voice which was deliberate and slow. He conceived the idea that he was being persecuted by invisible agents. Although he was as a rule quiet and undisturbing he nevertheless had brief periods of agitation during which he would attempt to run away and attempt to attack if interfered with. He would then speak more, eat more and walk more; the former immobility would disappear. During four years he had but four attacks of exaltation, each of which lasted only a few days.

The patient's mentality as depicted above remained practically the same during the first four years. At the end of that time improvement began to be noticeable. The hebetude, inattention, apathy, indolence, the monotonous attitude, the stereotyped mannerism— all commenced to improve. He took an interest in his surroundings and could tell correctly places and names. He began to question the members of his family, inquired about their health, expressed sorrow over the illness of his niece. He became cleanly and careful about his appearance. Began to pick up newspapers. Inquired about his neighbors. The depressive delusion disappeared completely. The patient gradually kept on improving and at the end of three months all that was left of the former condition was a state of exhaustion. He quickly became fatigued upon the least exertion, but mentally he was apparently clear. His perceptions were about normal, but somewhat slow. When spoken to, he had to think a little while before he replied, but all his answers were correct. Figuring he did without errors, but slowly. Briefly speaking, while he could carry on conversations, understand all and engage others in conversation, while he could take care of himself, nevertheless a certain sluggishness in ideation was evident. I considered him very much improved, so that he could dispense with an attendant.

Suddenly without an apparent cause he commenced to become very irritable. He could not sleep and became very rest-

less. When at home, he would talk continuously and pace the room. When he attempted to read, he could not continue doing it longer than a few minutes. He showed either exhilaration or anger. He ate then considerable amounts of food and drank enormous quantities of water. His comprehension, orientation, memory were good. He realized that his condition was abnormal and wished me to take care of him. This state lasted four weeks, when he began to complain of very severe headaches. Gradually the exalted emotional state subsided. The motor restlessness became less and less marked and he commenced to complain of feeling tired. He was kept in bed. He ceased to speak to his attendant, did not ask for food and appeared depressed. His mentality however was in a fair condition: he could understand when spoken to; his answers were more or less correct; he knew where he was. The depression grew deeper and deeper. He became exceedingly constipated and had vomiting spells. He could not digest the ordinary food. This state lasted three months, when he again began to be aroused and gradually drifted into a state of expansion similar to the first.

During the last eighteen months he has been presenting these alternating states—depression and exaltation. The former lasts always longer than the latter. At the time of writing this report he is in a depressive condition, but his mentality is fairly well preserved and he is free from delusions and hallucinations.

Case IV. A married woman of 35 with a bad family history (chorea, epilepsy, insanity) always was considered peculiar. Signs of mental derangement appeared for the first time about 4 years ago. She began to show slight confusion and a tendency to quarrel with every one in the house. She became destructive, would break valuable objects, bric-a-brac, etc., and even use violence. She would attack her servants, her husband and abuse her three little children. Day in and day out her home was in a turmoil. She screamed at the top of her voice, found faults with everyone, was exceedingly restless. Suddenly she would order her motor car and drive several miles at the highest possible speed; a slow drive would irritate her. At another time she would make her husband take her out to a hotel for a supper at midnight and then after the meal was prepared she would not eat it. At another time she would suddenly order a seat in the theatre and if the desired seat could not be obtained, she would become so excited and destructive that restraint had to be used. Wherever she went, she could not remain longer than a few minutes. Whatever she attempted to do, she could not keep up for any length of time. She would change her plans as rapidly as the ideas entered her mind. Her tendency to quarrel became more and more pronounced. She used very abusive language and any endeavor to reason with her or pacify her with all sorts of inducements met with absolute

failure. At the same time the confusional element made progress. She frequently made mistakes in names, and could not recognize faces. Persons that she was accustomed to see she took for some one else (illusions of identity). Equal errors she committed in dates.

This state was however not continuous. At certain times she would become lucid and the confusion with the illusions would disappear for a few days. Nevertheless the tendency to quarrelling, to finding faults and to agitation remained. Two months later her condition changed. The former agitation and restlessness changed to depression. The confusion became deeper and deeper. At times she was delirious. The illusions were more pronounced and hallucinations of sight and hearing made their appearance. The latter were all of a terrifying character: she saw her children and husband massacred and she felt their blood running over her hands. She heard voices above her room which threatened her with assault. She accused the nurse and physician of drowning her children. She would lie quietly muttering words and only occasionally scream out when a hallucinatory image would frighten her. This state lasted two months when she began to improve. Gradually her mind became more and more lucid, the hallucinations disappeared. She began to take outdoor exercises and the improvement steadily increased so that at the end of three weeks the relatives considered her cured. Nevertheless there was a certain feature about the patient that I could not consider altogether normal. When for example I would come in suddenly in her room, she at first would stare at me as if in an effort to recognize me and for two or three minutes she would be unable to speak to me as a patient to her physician who had been accustomed to see her daily for months. There was also a certain sluggishness about her movements, also about her thinking and figuring. She retained however her tendency to irritability and quarreling about the most insignificant occurrences. Soon her former excitability and agitation commenced to return and this condition gradually reached the same state as the previous attack. The confusional element returned and she passed through a period identical with the first attack.

During three whole years the patient presented these alternating phases of maniacal and depressive psychoses with brief intervals of apparent lucidity. I say apparent, as in my opinion the lucidity was not complete. The above mentioned sluggishness of ideation was observed by me in all the intervals, although the relatives considered the patient perfectly normal. Also it must be added that the quarreling attitude was invariably present through the three years of the disease.

About a year ago the entire mental state of the patient underwent a radical change. Since then until the present time not one

of the manic-depressive outbreaks occurred. Evident signs of a classical dementia præcox developed in lieu of the former condition. She began to lose the memory for names even of her own sisters and brothers. When asked about them she exhibited total indifference. As to the happenings of the day, she did not care to know them. She became apathetic and the painful occurrences in the family she looked on with indifference. When spoken to, she apparently listened, but did not take any interest and her answer had frequently no relation to the questions asked. Besides they were without any trace of emotion or passion. She did not make the least effort to voluntary actions or to initiative in any direction. She did not read and at times she was seen to remain in one position for hours without the least expression on her face. Lately she became also very resistive. No begging would induce her to get out of a certain assumed position or to do certain acts, such as showing her tongue or raising voluntarily her arm or crossing the legs. She was evidently also suffering from hallucinations, as frequently she screamed and showed anxiety on her face. Several times during the year delusional conceptions have been elicited and all of a persecutory character, in which the husband and one of her brothers figured most prominently. She became inattentive and careless in regard to her own appearance and lately she was frequently found soiled.

Such has been her condition continuously within the last year. The dementia from which she is evidently suffering is getting more and more profound, as its various elements are getting more and more pronounced.

A detailed analysis of the four cases presents some difficulty of classification. The first patient during a period of six years was suffering from one predominant delusion of self-blame, of the unpardonable sin accompanied by depression, extreme anxiety and mental torture. At the time of extreme depression he had short periods of great agitation. The picture of the affection is so far that of melancholia with intervening attacks of maniacal agitation of brief duration. It could therefore be classified in the manic-depressive group. On closer observation however there is one particular feature to be noticed which remained unaltered since the onset of the malady, *viz.*, the *loss of the affective sentiments.* It will be recalled that his indifference to his relatives, his lack of interest in their welfare, his total want of attention when he was spoken to about his parents, showed a profound involvement of the affective faculties. Although this manifestation was evident, the diagnosis of manic-depressive psychosis forced itself, especially in view of aggravation and

amelioration of the symptoms which occurred with a certain regularity. It is true that he never recovered completely from the depressive attacks during the six years. But the intensity of the one delusion with all the characteristics of those observed in melancholia led inevitably to the above diagnosis. On the other hand during periods of improvement when he enjoyed the theatre or a game and was capable of appreciating and discussing freely the subject of his delusion, even then the indifference to his family and the enormous change in his sentiments towards his relatives stood out prominently. The diagnosis therefore caused some hesitation and embarrassment. This uncertainty lasted until the time of his arrival in Rome. At that period evident signs of intellectual deterioration came to the surface. Gradually the condition became more and more accentuated and a typical picture of dementia præcox developed. If for a moment one refers to the incident of his escape to Cuba, where he kept on suffering from mental torture caused by the original delusive idea, and where he could have easily ended his life, but did not do it, if one also refers to the fact that he threatened me with shooting because of my complicity in a plot against him, and in spite of it he wrote me from Cuba regretting the worry he caused me, finally he returned from Cuba and placed himself voluntarily under my care—if therefore one considers these discrepancies in his mode of reasoning, one must admit that at the time of his manic-depressive psychosis profound changes of a more serious character were developing in the patient's mentality. The case therefore presented unusual difficulties from the standpoint of diagnosis. During the last year the affection assumed a positive form and a typical dementia præcox is now evident.

In the second case we find at the onset a symptom-group of typical melancholia. Later we observe phases of agitation alternating with depression. The patient's affective faculties were but slightly involved. Her intelligence outside of the delusive idea was fairly well preserved. During a period of two years the condition remained unaltered and the diagnosis was manic-depressive psychosis. Following a shock a decided change took place in the mental condition of the patient. Mental failure with typical symptoms of catatonia gradually developed. During a period of two years she had several remissions. Presently the symptoms of dementia præcox with catatonic manifestations are

evident. In this case there was no difficulty in classifying the affection, but only at its different stages. It may perhaps be said that the patient suffered during a period of six years from two affections, *viz.:* manic-depressive psychosis and dementia præcox. As the two affections were not separated from each other by an interval of lucidity of any reasonable duration, one is naturally led to admit that either the two affections succeeded each other incidentally or else there exists a certain pathological relationship between them.

In Case III we find a typical picture of dementia præcox which existed for four years. There were periods of improvement and remissions. After one of the remissions the patient rapidly developed a maniacal symptom-group and for the last two years he has presented periods of depression and exaltation, the former lasting longer than the latter. The manic-depressive psychosis from which he is distinctly suffering now followed closely the symptom-group of dementia præcox.

The fourth case presents at first a picture of manic-depressive outbreaks with an element of confusion accompanied by hallucinations and illusions which were continuously present. A certain involvement of intellectual faculties was observed even in the intervals during the periods of remissions. The patient also presented at that time the querulous attitude described by some as a separate psychosis, but which in this case was associated with the manic-depressive form of insanity. At the end of three years the patient's condition changed completely to the syndrome of dementia præcox from which she is suffering now.

The first, second, and fourth cases commenced as forms of the manic-depressive group and terminated as cases of dementia præcox. The third case presented at first the picture of dementia præcox during a period of four years and that of manic-depressive insanity during the last two years. The diagnosis did not present especial difficulty as long as the patient remained in either of the two forms of insanity. But the question arises: Was the diagnosis correct in any of the occurrences? It must be borne in mind that in the first, second and fourth cases the patients presented during the entire course of their manic-depressive disorder also important symptoms belonging to the dementia præcox group, symptoms which are not to be expected in the classical form of manic-depressive insanity. In the first case,

for example, there was a loss of affective sentiments through the entire course of the manic-depressive outbreaks, as well as in the intervals between the individual attacks of this psychosis. In fact this pathological phenomenon was most conspicuous at any stage of the affection. As it is well known deterioration or absence of affectivity with or without diminution of judgment and intelligence constitutes one of the most significant symptoms in the developing dementia præcox. In the second case we also find a certain involvement of the affective faculties during the entire course of the manic-depressive cycle. In the fourth case the marked querulous attitude of the patient with assaults and attacks of all sorts on her relatives rendered her totally oblivious to all possible annoyances, disturbances and actual pain which she caused them. She was totally indifferent to them. We have here again an example of involvement of affective faculties, although in a different manner from the other two cases. Besides, the presence of confusion with hallucinations and illusions which existed through the entire course of the manic-depressive outbreaks together with intellectual enfeeblement between the outbreaks, renders the diagnosis of pure manic-depressive insanity somewhat embarrassing, as in typical forms of the latter affection those elements are as a rule absent. Nevertheless those three patients presented alternating periods of depression and exaltation with their individual characteristics. In view of the additional unusual symptoms all we can say at present is that we are dealing here with atypical forms of manic-depressive psychosis.

In Case III a somewhat different development is observed. The patient commenced his psychosis as a typical demens præcox and later became a manic-depressive. The history shows that the latter disorder developed almost immediately after he improved considerably from the first. Although his mentality during the outbreaks of depression and exaltation and in their intervals was fairly well preserved nevertheless it was not complete. There was an element of intellectual impairment which he carried over from his first affection. Otherwise speaking he developed the above mentioned outbreaks during a remission of his dementia. But remission does not mean recovery. Indeed my patient although much improved then, showed some quantitative changes in his intellect which rendered his manic-depressive attacks also somewhat atypical.

The four cases studied here and kept under observation a sufficiently long time to warrant some deductions lead to the following thoughts. First of all, two apparently different psychoses, if they are different, may follow each other in the life of an individual. Second, if the manic-depressive form develops first and dementia præcox next, symptoms of the latter will be observed in the course of the first. The question therefore arises: Is it with a genuine manic-depressive psychosis of Kraepelin that we deal here, or else is it dementia præcox from the very beginning to the end, in which its own certain phenomena assume at one time in its history the form of alternating episodes of depression and exaltation? If the latter proposition is correct and I am inclined to admit it from the study of first, second, and fourth cases, a very important differential diagnostic element presents itself at our command, to wit: if in an individual affected with alternating outbreaks of depression and exaltation, each characteristic of melancholia and mania respectively, a change of his affective and intellectual faculties and particularly of the first is observed, the presumption is in favor of an eventual dementia præcox.

If the patient begins his mental disorder with symptoms of dementia præcox and later develops the picture of manic-depressive psychosis, but one following closely the other, the latter may carry with it some important features of the first, as it is seen from Case III, and these very same features present then a very significant diagnostic element. The outbreaks of depression and exaltation may be then only episodic manifestations of the original malady.

The present study leads also to another thought, a thought concerning the creation of the type of manic-depressive psychosis. There is no doubt that in a certain group of cases melancholia may repeat itself and mania may recur in the life of the individual who once had one attack of these affections. It is also true that these two affections may alternate, as Kraepelin has shown. It must however be admitted, as my present study leads me to believe, that the new symptom-group creates enormous diagnostic difficulties in another group of cases. The conception of Kraepelin's type leads to serious generalizations, and there appears to be a risk of including in manic-depressive psychosis several other mental affections of different prognoses.

In the present contribution attention is called to special diagnostic elements which may be helpful in classifying certain symptom-groups which may appear as those of the manic-depressive type, and at the same time be closely allied to dementia præcox. In my judgment the new Kraepelin's type is not final because of the above mentioned difficulties it creates. Prolonged study of cases of this type is indispensable before a definite view can be formed.

Society Proceedings

PHILADELPHIA NEUROLOGICAL SOCIETY

April 28, 1911

The President, Dr. Alfred Reginald Allen, in the Chair

NEUROLOGICAL MANIFESTATIONS OF PELLAGRA

By Samuel Stern, M.D.

The sense of false security under which the medical profession of the northern and eastern states labors as to geographic and climatic limitations associated with a supposed absence of customary diet were first pointed out. Attention was then called to the common presence wherever sought for of the essential factors necessary to the production of the disease, e. g., poverty, poor hygienic surroundings and Indian maize or its products included in the dietary of the affected individuals.

The erroneous views as to the symptom complex necessary to enable one to diagnose the disease were also discussed, and the dangers attendant upon waiting the appearance of any one symptom or symptom group, with a plea for a study of, and the early recognition of, the disease.

Of the various nervous phenomena, both organic and functional, described as attendant or dependent upon a pellagrous infection, neurasthenia, hysteria, hypochondriasis, tremors, trophic changes, pseudo or true degenerations were included as prodromal or terminal evidences of the disease.

The psychosis included all forms with which the many classifications are endowed.

In conclusion, it was pointed out that pellagra has ceased to be of academic interest to the American physician, its presence and recognition over a large area spreading rapidly with the physician's knowledge of the disease calls for intelligent investigation and further elucidation of the disease for the general public's and profession's benefit.

A CASE OF TRAUMA OF THE NECK PRODUCING SYMPTOMS SUGGESTING PACHYMENINGITIS

By George E. Price, M.D.

A male negro, 44 years of age, a laborer by occupation, received a wound in the neck from a small piece of steel. The fragment entered in the median line, anteriorly, at the upper border of the thyroid cartilage. The wound bled slightly, but no other inconvenience was experienced at the time except moderate soreness. One and a half hours after the accident, an X-ray examination was made by Dr. Austin at the Germantown Hospital, locating the chip of steel just in front of and almost touching the

body of the fourth cervical vertebra. No operation for removal was attempted. Sixteen days after the accident, a paroxysm of coughing was followed by expectoration of the foreign body. Within a few hours pain developed in the back of the neck, later extending down both arms and being accompanied by stiffness of the neck and back. Dr. Price saw the man through the courtesy of Dr. Wm. Shick, about eight weeks after the accident. Symptoms present at this time were: fever of 100° to 101°; marked rigidity of the back and neck and severe pain radiating down both arms. There was no muscular wasting, no tenderness over the nerve trunks of the brachial plexus, and no sensory loss. The reflexes were prompt; there were no eye symptoms and no hysterical stigmata. From this time until the patient was presented before the Society there had been a gradual subsidence of the fever and pain until practically no symptom remained except some stiffness of the neck and back. The diagnosis of pachymeningitis as originally considered was not justifiable in view of the improvement in the case.

Dr. F. X. Dercum said he had seen Dr. Price's case at the time the man came into the hospital and there was very marked pain radiating down the brachial plexus toward the left arm.

Dr. A. A. Eshner asked what association Dr. Price made between the injury and the development of the cervical pachymeningitis, that is, as to whether the piece of steel in any way penetrated the spinal canal or whether the traumatism exerted any influence upon the meninges.

Replying to Dr. Eshner's question, Dr. Price said that he regarded the condition as being due to infection along the track of the foreign body. Otherwise he was unable to account for the fever and other symptoms.

UNILATERAL ASCENDING PROGRESSIVE MUSCULAR ATROPHY

By George E. Price, M.D.

A man, age 31, an acrobat, referred by Dr. Sargent on account of a weakness and inability to extend the two middle fingers of the left hand.

Examination revealed not only a wasting of the smaller muscles of the left hand, to which the weakness of the fingers was due, but marked wasting of the left arm and leg, the triceps being practically absent. There was also some atrophy of the muscles of the left side of the trunk. The musculature of the face and of the right half of the body was unaffected. Fibrillation was marked especially about the upper extremity. Reflexes were prompt in the left arm and exaggerated in the left leg. Babinski's sign and ankle clonus were absent. There was no bladder disturbance. The eyes were normal. Reactions of degeneration were not present. The man gave a history of having noticed wasting in his left leg when sixteen or seventeen years old, a few weeks after having sprained his left ankle. When thirty years old, while performing, he fell, his weight coming upon the left hand and arm. At this time he noticed a "lump" about the middle of his left arm, posteriorly, and since then noticed that his left arm was smaller and weaker. He had no pain of any account. The man uses alcohol moderately and denies syphilitic infection. An uncle and a first cousin were insane, otherwise the family history was negative. The case was considered to be one of amyotrophic

lateral sclerosis, the interesting features being the unilateral distribution of the affection, together with the long duration and ascending character of the atrophy.

Dr. Allen asked what were the electrical reactions of the weak muscles.

Dr. Price in reply said that where the muscles were extremely paralyzed he was unable to obtain any reaction whatever. Where the muscles were less affected, the contraction was greatest at the cathode when the galvanic current was employed.

Drs. M. H. Fussell and S. Leopold reported a case of tumor of the right temporal lobe presenting cerebellar symptoms.

Dr. William G. Spiller said the man had been a patient under his care at the Philadelphia Hospital. At the time Dr. Spiller had charge of the man he did not have hemiplegia, and the symptoms were rather obscure, but those obtained suggested more a tumor in or near the cerebello-pontile angle. There was also trigeminal nerve implication.

Dr. J. Hendrie Lloyd thought one of the most interesting features of the case was that of the deviation of the head towards the side of the lesion. It would indicate involvement of the centre for head-movements and would be of some localizing value. Dr. Lloyd did not quite agree that the syndrome of Weber would be very commonly seen in cases like this. The syndrome of Weber usually indicates lesion of the mid-brain. Of course this was a somewhat complicated case and one that did not admit of a dogmatic diagnosis.

Dr. Weisenburg stated that he had a patient whose history and necropsy findings bore some relation to the case presented by Dr. Fussell and Dr. Leopold. The patient was a woman who had been in the nervous wards in Blockley for many years. The history was that she began to develop a protrusion of one eyeball and soon afterwards had convulsions which were epileptic in nature, but which were followed by a hemiplegia lasting from a few to twenty-four hours, and during which time only could a Babinski reflex be obtained. She had besides on the side of the exophthalmos, ptosis of the upper eyelid with some palsy of the external ocular muscles. At necropsy a tumor about the size of a small orange was found in the anterior part of the middle cranial fossa pressing upon the orbit. The tumor also compressed the temporal lobe on that side and the cerebral peduncle was also diverted to the opposite side. It seemed to Dr. Weisenburg that this symptom-complex of exophthalmos with ptosis and ocular palsies combined with a hemiplegia upon the opposite side was very indicative of a temporal basal lesion. The presence of a Babinski sign after the convulsion is also another important symptom, and is usually indicative as in this case of an organic lesion on the contralateral side.

Dr. Cadwalader said that he had examined a patient of Dr. John K. Mitchell in whom the cardinal symptoms of cerebral tumor had been present for some months. During the entire course of the disease localizing signs were indefinite. Ptosis, generally incomplete, sometimes unilateral, and sometimes bilateral, but usually more pronounced on the right side, was observed for nearly two months, without any other signs of cranial nerve involvement or of weakness of the extremities. About three weeks before death the extremities of the left side gradually became weak and there was some tremor and awkwardness of the left hand. At necropsy a large glioma was found growing from the first temporal convolution of the right side and extending inward, partly infiltrating the internal capsule.

Dr. Leopold said there was no adiadokokinesis nor nystagmus nor involvement of the cornea, thus making the diagnosis of a cerebellar tumor questionable. There was right exophthalmos and turning of the head towards the right and backward. In regard to the ptosis, Dr. Spiller said perhaps this might have been from sympathetic involvement. That may be true. In these conditions besides the ptosis there has been reported involvement of the internal rectus and involvement of other muscles of the eye. And it could be explained by pressure directly on the third nerve. Many cases have been recorded showing this pressure; there have been other instances mentioned. Dr. Leopold called attention to the fact that this symptom-complex of ptosis on the one side and contralateral hemiparesis was also mentioned by McCuen and Körner, the otologists, before Knapp brought it out as a complex of cerebral tumor. They found it in abscess of the right cerebellar lobe.

Dr. Wm. G. Spiller and Dr. C. J. Hunt reported a case of extensive extradural spinal sarcoma.

Dr. Dercum thought we must all agree that Dr. Spiller's case was a unique one. He did not remember having seen or read of a similar case. Dr. Dercum had observed a symptom group somewhat similar. In his case there was also this remarkable picture of loss of knee jerk, with the presence of ankle clonus. That was one of the facts that impressed itself upon Dr. Dercum's mind.

Dr. Tom Williams said he would like to relate a case which he saw recently which presented some of the symptoms presented by the case of Dr. Spiller. He said he had an impression that recently Claude, of Paris, had reported a case of multiple endotheliomata of the dura. Dr. Williams saw his case only two weeks ago, and the symptoms had begun by a chill four or five days previously. This chill was signalized by pain in the chest and abdomen, which finally lodged in the testicles and became so intense that the patient, who was a Christian Scientist, could no longer stand it, and the parents called in a physician, Dr. Musgrave. A genito-urinary man, Dr. Lehr, was called and then Dr. Williams. They had found no signs of disease in the chest, and there was no local tenderness or redness or swelling of the external genital organs. Dr. Williams found a loss of the right lower abdominal reflex and exaggeration of the upper abdominal reflex, diminution of patellar reflexes, exaggeration of Achilles reflexes and some tenderness, not marked, of the tibia upon the right side which varied from day to day and from side to side. On stroking the sole an extension of the right great toe, which Dr. Williams had never been able to confirm as Babinski's sign because the man held his toe in a peculiar position, which appeared to be normal and the defense reaction was excessive. But as this was so bilaterally and the lateral response was flexor, some significance might be imputed to the difference. Besides there was a paradoxical response also on the right side, though Oppenheim's procedure failed to cause extension of the toe. The temperature had been 101, slowly falling for a week to normal. Pulse was over 100. patient was exceedingly irritable, the pupils were dilated, he could not sleep, looked frightened and very much perturbed. In a few days, perhaps two or three, he developed first ankle clonus on both sides, the sign of Oppenheim became quite clear on the right side, there was never, however, distinct Babinski's reflex, the knee jerks became so feeble that they could only be elicited by reinforcement. There was tremor of the quadriceps muscle on the right leg, the contraction of the hamstring was also

weak and the patient's station was feeble, the knees giving way. In the meantime the lower abdominal reflex had returned, the pain in the testicles had become attenuated, but the patient had been taking morphine constantly. The tenderness increased along the tibia. The ankle clonus, which had been produced on both sides, concentrated upon the left side and became quite marked. All this occurred in a week, during the gradual subsidence of the general symptoms. The pain subsided, occurring only at night. The pain in the shins disappeared, the ankle clonus subsided and finally disappeared, and the extensor pollicis of the right toe became less prominent, though never quite disappearing. The patient was able to go to New York when these symptoms subsided, leaving only the tremulous contraction of the quadriceps femoris, which has since cleared up. The diagnosis provisionally Dr. Williams made was a syndrome, due probably to infective myelitis consequent upon a chill, but from the exceedingly sketchy description given Dr. Williams thought it was probably poliomyelitis.

Dr. S. D. Ludlum and Dr. E. Corson-White presented a paper on The Study of Heredity in Defective Children.

Dr. Cornell said he was very much interested in the paper because it had to do with a field in which he was daily interested. He was very sorry that the charts were in such position he could not deal with them thoroughly. He said he happened to be connected with the New Jersey Training School for Feeble Minded Children, in which there are 500 children, and the director of research is a psychologist. It is more or less suggestive of the interest a man takes in his own particular field that this gentleman has five field agents looking up the family histories, and he is a firm believer that almost all cases are due to heredity. Dr. Goddard, who is in requisition for lectures, has a great number of charts showing family histories for two generations at least, the record of feeble-minded, evidences of degeneracy. The speaker said he wished to bring this point out because Dr. Goddard either has found what you can't call anything else but heredity, or he has fallen into the weakness of having agents find what he wants them to find. The charts are overwhelmingly convincing, or else they are unwitting exaggerations. In a general way it seems the cases are degenerates; the physical examination of these children shows a large proportion of defective organisms there in the New Jersey institution, and the superintendent called attention to the fact that many had low vasomotor tone and they are generally defective, so personally the speaker said he had come to look upon these and those in state institutions, that they are mostly the type Blockley furnishes, and the feeble-minded brain is simply on the top of the whole weak structure. He was glad to hear Dr. Ludlum speak of his experience with the Wassermann test. In corroboration of Dr. Ludlum's statements he was surprised at this, of course, in a public institution in patients sent there as State charges they have all kinds of ancestry. One more thing, that is the classification of children on the chart did not give a very definite idea of the relation of syphilis to feeble-minded in a general way. For instance hydrocephalus is more or less of an indefinite thing and microcephalus means a small box around a small brain. The blindness is possibly ophthalmia neonatorum, but in those cases there is such a medley of paradoxes that it is difficult to tell where degeneracy begins or where accident begins. The speaker said he had brought along a very interesting photograph which did not bear upon the subject in the chart exactly; it was that of

a family which was under the care of the Society for the Prevention of Cruelty to Children at Third and Tasker Streets; they were all feeble-minded, the father, the mother, a son was at Spring City at the institution for feeble-minded and five children were feeble-minded. The Charity Society knew of this family three years ago when there were three feeble-minded children and now there are six. But under the present legal statutes there would be nine probably as the woman is now 45.

Dr. Tom A. Williams asked Dr. Ludlum to state more specifically the figures. He said that nearly all cases in which the history could be obtained showed definite disease in the parents. Dr. Williams would like to know in what proportion of histories obtained the children showed that degeneracy. He would like to ask in view of the results from the New Jersey school would it not be interesting to find out whether in many of Dr. Ludlum's cases there was present the sign which Dr. Graves, of St. Louis, has attached so much importance to, that is the scaphoid scapula, which he believes is due to degeneracy, due to syphilis of parents or ancestry. It would be interesting to know whether many of these patients presented this stigma.

Dr. S. D. Ludlum said he had never seen a Wassermann reaction transmitted through several generations. He did not know that it was ever transmitted through two generations. Several cases at the Witmer School showed no reaction. Whether they had spirochetes he did not know. They might have inherited the disease; he did not know. Dr. Ludlum said he had read Dr. Graves' articles, and they seemed to find the scaphoid scapula in children who are as healthy as any others mentally. Dr. Ludlum said they had been collecting stigmata of degeneration, and found that the worst syphilitic or degenerate did not seem to have hardly any.

TRAUMA AS A CAUSE OF AMYOTROPHIC LATERAL SCLEROSIS, WITH REPORT OF TWO CASES

By Andrew H. Woods, M.D.

Five hitherto unreported cases and a review of those recently collected by Mendel, Gelma and Stroelin, and others.

The insidious weakness and awkwardness of this gradually developing degeneration might be expected often to first announce itself through an accident. Hence the trauma might be the result of the already begun disease.

After separating all cases where this might be the sequence, there still remain grounds for a strong presumption that trauma may be the proximal or inciting cause of the disease.

The ultimate or essential cause is not known. It may be a congenital fault in the cells and tracts which renders them liable to break-down if later shocked by trauma, infectious diseases or strains.

Dr. George E. Price said in reference to the case reported by him that he had considered the question as to whether or not the accident or accidents had anything to do with the resultant atrophy. The first accident, a sprain, was not so severe as to prevent the man from walking, and it seemed to Dr. Price that it was probable the sprain fixed his attention on the leg and caused him to discover the wasting. In reference to the second accident, the fact of his noticing the lump in the middle of the

triceps was simply an indication of the fact that the extremities of the muscle had wasted to a greater extent than the central portion, this atrophy antedating the alleged cause. In the Jefferson Hospital dispensary almost every case of amyotrophic lateral sclerosis studied would claim trauma, but in nearly every instance the examiners were able to satisfy themselves that the trauma had very little if anything to do with the pathological condition.

Dr. Tom A. Williams said that in the interrelation of amyotrophic lateral sclerosis and trauma we must take into consideration also two facts, one that it is not easy to postulate in all cases the diagnosis without examination post mortem. That is to say, when you have, as in the second case a syndrome which seems to be amyotrophic lateral sclerosis it may have another etiology. Hence it may have been caused by an ascending infection along the nerves causing disease of anterior horns and contiguous structures as Orr and Rows' experiments showed. In the second place, you must take into consideration the research of Roussy and later of Rossi, who showed that in cases of amyotrophic lateral sclerosis they found always a definite dystrophy of the cells in the Rolandic area, so it would seem that the true syndrome of amyotrophic lateral sclerosis should require the ascertaining of that post mortem.

Dr. S. Leopold said as to the question of the incidence of amyotrophic lateral sclerosis, as in pneumonia trauma may play a part in the production of the infection, in the same way he felt that in some of these cases of amyotrophic lateral sclerosis it acts as a secondary factor in starting the process.

Dr. Alfred Reginald Allen said that one of the most interesting cases of amyotrophic lateral sclerosis that it was ever his good fortune to examine was in a case he was asked to see in the northern part of New York state where the winters are very severe. The woman in question had fallen into a well in the winter time, had been rescued with some degree of difficulty and terribly injured so far as cold and wet and scarification and bruises were concerned. She developed amyotrophic lateral sclerosis. One of her brothers or sisters had Parkinson's disease and the father was one of those peculiar characters whose hand came right out of his shoulder. It was a queer family.

SIMULATED QUADRANTIC HEMIANOPSIA

By Tom A. Williams, M.D.

An ex-sailor of 41 years was referred by Dr. Henning, to whom he had been sent by Dr. Burch because of inability to perform more than light work. He has a small pension and *has applied for an increase*. He declares that he was believed epileptic in the Navy, and that since the accident of falling out of his hammock while asleep fifteen years ago (from which he became, too, totally blind, remembering nothing), life has seemed a dream, it is hard to understand people, his memory is poor, and he is very nervous on the street, not being able to see out of one side of the eye, and bumping into objects.

As the hemiopic person usually carries his head turned towards the side of the sound retina and has to turn his head still further to see objects on that side of him, this man was suspected at once; for there was

no deviation of the head. Accordingly he was nonchalantly asked to move a dark screen so that he could be hidden while stripping. He did this in a dark corner without any head movement to indicate loss of vision in the periphery of either visual field. But on approaching the field with test objects in the usual way, he declared that objects were only seen as they impinged upon the right upper retinal quadrant, i. e., below and to the left.

As to his apparent good faith there was added a loss of the right Achilles reflex, and some inequality of others, along with an uncertainty of the sensibility to the diapason on the malleoli, it was necessary to confirm either the patient's opinion that his visual field was restricted or Dr. Williams' that it was not.

As the pupils reacted normally and the optic papilla was not diseased, an anterior lesion was excluded. The diagnosis of simulation was clinched by his winking when before the right field of the right eye was placed the percussion hammer with which ostensibly the orbicular response to a tap on the facial nerve was being tested. This took place, both from above and below, on the left and right side, and conclusively proves that he actually perceived objects with all parts of the visual field.

It is hardly conceivable that such a syndrome had occurred by suggestion in medical examination; and apparently it was intentional. This was proved when he paid a visit the second time, after his doctors had been told what had been found; for on presenting the hammer in the same manner as before, no wink occurred, the patient staring fixedly before him and declaring that he saw nothing except when the hammer was below to the left. It was, however, easy to show that he was feigning, by holding opposite the mid-horizontal plane of the eyeball just within the visual field two strips of color. He saw only the one color; and when they were reversed similarly; but *he saw the color which impinged upon the blind field,* and not that upon the field which saw. Hence, his feigning was deliberate, as he had suppressed the reaction by which it had been formerly detected, and yet he still showed, unknown to himself, that his blind field saw.

Dr. T. B. Holloway asked whether there was improvement in the patient's vision, whether the scotomata disappeared.

Dr. Williams said the scotomata were still present in the last examination made two months ago, but the ophthalmologist, Dr. Henning, thought they were not so dim. He thought there was increase of the fatigueability of the retina in both examinations.

Translations

THE THEORY OF SCHIZOPHRENIC NEGATIVISM[1]

By Dr. E. Bleuler,

of Zurich

Translated by William A. White, M.D.

superintendent of the government hospital for the insane, washington, d. c.

CONTENTS

The theories of negativism that have been advanced heretofore are incorrect or unsatisfying. Negativism is a complicated symptom, with many, in some cases, coöperating causes.

The predisposing causes of negativistic phenomena are:

1. *Ambitendency,* which sets free with every tendency a counter tendency.

2. *Ambivalency,* which gives to the same idea two contrary feeling tones and invests the same thought simultaneously with a positive and a negative character.

3. *The schizophrenic splitting of the psyche,* which hinders the proper balancing of the opposing and coöperating psychisms, with the result that the most inappropriate impulse can be transferred in action just as well as the right impulse and that in addition to the right thought, or instead of it, its negative can be thought.

4. *The lack of clearness and imperfect logic of the schizophrenic thoughts* in general which makes a theoretical and practical adaptation to reality difficult or impossible.

On the ground of this disposition there may occur direct negativistic phenomena in such a manner that positive and negative psychisms replace one another indiscriminately, only the incorrect reactions standing out as pathological negativism.

[1] E. Bleuler, Zur Theorie des Schizophrenen Negativismus, Psychiatrisch-Neurologische Wochenschrift, Vol. 12, 1910/11, Nr. 18, 19, 20, 21.

As a rule, however, the negativistic reaction does not appear merely as accidental, but as actually preferred to the correct reaction.

In ordinary external negativism which consists in the negation of external influences (Ex. Command) and of what one would normally expect the patient to do (Ex. Defaecation in the closet instead of the bed), the following causes are at work:

(*a*) The autistic withdrawing of the patient into his phantasies, which makes every influence acting from without comparatively an intolerable interruption. This appears the most important factor. In severe cases it alone is sufficient to produce negativism.

(*b*) The existence of a hurt (negative complex, unfulfilled wish) which must be protected from contacts.

(*c*) The misunderstanding of the surroundings and their purpose.

(*d*) Direct hostile relations to the surroundings.

(*e*) The pathological irritability of the schizophrenic.

(*f*) The pressure of thought and other difficulties of action and of thought, through which every reaction becomes painful.

(*g*) The sexuality with its ambivalent feeling tones is also often one of the roots of negativistic reaction.

Inner negativism (contrary tendency opposed to the will, and intellectually opposed to the right thoughts) is accounted for, in large part, by ambitendency and ambivalency, which in view of the inner splitting of the thought renders intelligible a slight preference for the negativistic reaction. Very pronounced phenomena of inner negativism probably have other coöperating causes, which we, at the present time, do not know.

A conclusive explanation of all negativistic phenomena would be premature. It seems to me, however, that the falsity or unsatisfactory nature of hitherto erected theories might be demonstrated, and it is always possible to discover roots of negativism in other directions and to understand genetically, at least, a part of the symptoms grouped together under this name. A better attitude is gained in this way for further progress.

At this point we must first make clear that negativism is not a unitary symptom. The chief and predominating group is characterized throughout by the fact that the patient, by outside

influences, by command, will not do precisely, what under normal conditions would be expected (passive negativism); or, that he does exactly the opposite (active negativism). A command is not executed, most often after a clearly repulsing mimik, if one tries to bring about a desired movement passively (raise the arm, sit up to slip on clothes) they show opposition, seek to get away, resist often with abuse and blows. The patients will not stand up, will not go to bed, if it is desired of them; they will not sit at the place assigned to them, will not eat the food offered them, they take the soup with the spoon for the preserves, and the preserves with the soup spoon; they satisfy natural needs out of time and place. From simple opposition to the active execution of the opposite of what is expected there are all gradations.

Not even this circumscribed group gives an impression of unity. Most patients indeed combine their negativistic actions with an affect of irritability, vexation, anger. This emotional reaction is, however, not a necessary component. If the negativistic action is simply the contradiction of a custom, if it is not interfered with from without, the previous mood is usually maintained; the patient lies down, with apparent indifference, in the bed of his neighbor; in some cases one sees even a certain mirth over a successful trick. Repression first awakes irritability in these cases.

Often the patients maintain their indifference in spite of opposition; it may be that very strongly negativistic patients are permanently euphoric and do not come out of this mood, while they resist with bites, scratches, and blows the invitation to shake hands; their defense is sport for them like a jolly play. More commonly the whole behavior looks like that of a flirt; women patients watch the physician, as if they were waiting for him to offer them his hand, or bring forward a request, so that he must busy himself with them, and then, in their negation, behave like a maiden who stimulates her lover, but tries to appear as if she were keeping him off. At other times the negativism has a plainly erotic character, sometimes in the agreeable sense of a love-play, sometimes in an unpleasant sense, as the aversion to an attack, and often in both directions at once.

Besides this outer negativism there is also an inner, which most frequently affects the will. The patient can not do exactly what he wishes to do. In the stage between thought and expression an

inhibition, a contrary impulse, or a cross impulse can make the action impossible. So we see patients who rush to take a proffered bit of food, stop half way between plate and mouth, and finally refuse the morsel; with every other act the same results follow. If they start to shake hands: at any point the action may not only stop but the hand, as the result of a contrary impulse, may be placed behind the back.

Often the patients frustrate the results of an act by other movements. They stretch the arm out in order to proffer the hand but flex the forearm and hand so that the hand can not be taken; or on the request to show the tongue they put it out but turn away the head. In some of these cases of simultaneous obedience and disobedience one usually sees the external negativism. But undoubtedly the phenomenon occurs as a pure will-negativism. I have noticed it when the patient spontaneously occupies himself in something without outside invitation, for example in eating; mostly I have observed it in piano playing. They reach out for the stroke and strike down with the forearm, but towards the end of the movement dorsally flex the wrist to the maximum, so that the fingers do not reach the keys, or the patient turns the eyes to one side, in order to observe something, and at the same time turns the head to the other side (or the reverse).

Cross impulses assert themselves in that instead of a willed or begun act another is carried out; the patient starts to take a spoon (to eat), the begun movement is changed however and he takes the fork, puts it in the bread basket or does something else equally peculiar. These cases present all transitions to the apraxoid appearances of schizophrenia, which on their side again have different roots.

Not infrequently negativism shows itself towards a task which has already been completed. The patients destroy what they have made. Sometimes as if in anger, sometimes as if from a free resolution, sometimes compulsively, resenting it in the doing.

It is very difficult to get a clear idea of the subjective process of this will-negativism. Very few patients offer any explanation. It is certain, nevertheless, that some are aware of the disturbance, but not others, and that all possibilities actually occur with regard to the psychological point where this sets in. The patients sud-

denly no longer will what they have just intended, or they suddenly will the opposite; their motive may come into consciousness or not; the goal idea becomes altered. This can, however, also remain the same, while the centrifugal impulse becomes disturbed somewhere in the tract z-m, which one can not conceive sufficiently long and complicated (compare for example Liepmann's researches on apraxia). Here the patients of course become more or less aware of the disturbance; but some bear it with the thoughtless indifference of schizophrenia, others feel it as a peculiarity which has befallen them, and conceive it, sometimes as something abnormal, sometimes as an influence from outside. Not at all seldom the negativistic impulse is transferred into hallucinations, which then, like other sensory falsifications, are interpreted subjectively in the most varied manner. A catatonic, for example, who will say something, hears his neighbor command, "Hold your mouth." Another, who will eat, the voices forbid, or say, it would not be right; if he does not eat, it is again not right; he asks despairingly, what in heaven's name he may do. To a third the voices always say the opposite of what he must do. A fourth receives hallucinatory commands for example, to write a letter; as he is about to obey, the voices forbid him. He calls these hallucinations very significantly "plus and minus voices." There is probably little difference in principle when the negativism is transferred into delusions. If one requests such a patient to eat, stand up, walk, he does not do it. Afterwards he complains that he gets nothing to eat, that the physician compels him to lie in bed, forbids him to walk. The commonest negativistic delusion is in general that the patient believes it is forbidden him (under threats of danger or temporary or everlasting punishment) to do what he wishes. It is often shown from the change of the ideas and from the incorrect or artificial causal connection, that the delusion is in reality secondary, springs from the negativistic attitude, and so only apparently accounts for the negativistic behavior.

Intellectual negativism, negation of thought content, is the least known of all. Naturally it can only become perceptible as opposite thoughts; it will hardly be possible to demonstrate the existence of a mere negativistic resistance against the contents of the thought. We find patients, who for each thought must think the opposite, or instead of a thought, imagine its negation

or its opposite. An intelligent and philosophically accomplished catatonic said, "If one utters a thought, one sees always the opposite thought. That reinforces itself and extends so quickly that one does not know which was the first." Others complain that the thought comes to them "that is cold." when they touch something warm, and the like. One of our patients who was still able to work and was not confused had at times lost the feeling for positive and negative: she praised and found fault with her possessions, her husband, etc. in one breath, so that it was not possible to bring out what she really meant.

If a patient retracts his own declaration, at times right afterwards in an agitated, pathetic tone, one can relate it just as well to negativism of the will as to that of the intelligence; he has come to the institution to get evidence—no, he wishes no evidence; and so forth.

In intellectual negativism the subjective side of the symptoms is also very variable. Many patients experience negativistic thoughts as compulsory, others are indifferent, and again others do not notice it at all. This form of negativism is also often projected as hallucinations; the patients then often hear the opposite of what they think or what they perceive in the outer world. It may also sometimes occur that the negativistic thought at its inception is transferred into compulsive actions so that the patients must say the opposite of what in reality they think.

Occasionally intellectual negativism affects only the speech mechanism. The patients say the opposite of what they wish to say, especially they express against their will a negation, when in reality an affirmation was thought. "You are not a wretch," may be said to the physician, as a résumé of a prolonged abuse for unjust confinement. One catatonic who was told to step up on a platform in the clinic protested energetically that she would not "go down there." Patients do not by any means always notice such mistakes, not even when one tries to call them to their attention.

Probably it is a milder form of this same anomaly when the patient expresses the correct idea but in an unexpected negative form: "that is not beautiful" for "that is ugly"; "that is not ugly" for "that is beautiful." In one case, which I have been able to observe for many years, such negative expressions in the mind of the patient became a unity before which another

negation could be placed. She would say, "It is not not-ugly," in order to say that something was ugly. The "not-not-ugly" was used again as one expression and is used with a negative to express something that is beautiful. It is conceivable, that the patient easily became confused and was no longer clear whether she affirmed or denied something; then held the listener responsible for puzzling her.

Negativism in the transference of heard words into the corresponding thoughts has not yet been observed by me. It is certainly not rare that the patients understand the opposite of what we say. That is, however, only the case when this opposite is identical with their delusions and wishes. The cases known to me are therefore ordinary examples of illusions of perception and memory.

It is a very important, and yet an often overlooked characteristic of negativism, that it does not show itself uniformly, but at times is present and at times absent in accordance with the psychical constellation. It is quite usual that patients in their relations with other patients and with the attendants appear free from negativism, but on the contrary, they are very refractory to the physicians and their regulations. The reverse is not quite so common. To visitors also the conduct may be the contrary of the usual. Certain patients become suddenly negativistic when one touches a complex. Others, on the contrary, under the same circumstances, may lose their negativism for a time.

What we have thus far designated as negativism must appear after the mere description, to be a symptomatological collection, made up of very different things, and after it has been pointed out that the genesis of all these phenomena is not uniform, one may ask why all this is included in one conception. Not from respect for the teachings of the past, but because we are not yet able to distinguish between the various psychic processes which call forth negativism. The most varied manifestations may be derived from the same roots, and all the varieties mentioned may occur in the same patient in such mixtures and transitions that one will never be able clearly to separate them.

It is self evident that inner negativism can assert itself outwardly in negativistic acts. He who instead of "agreeable" thinks "disagreeable," must act wrongly, and will-negativism may lead to the same inaction or to contrary action as mere defense

to outside factors. On the other hand the repelling of outer influences causes an inversion of the feeling tone, which evidences itself as inner negativism. The offering of food often causes disagreeable feelings, just because it comes from without; the declining then is obvious. But the disturbance should be sought in the negativistic vitiated emotional reaction rather than in the relation to the external world. This cannot be entirely denied because pararythmic reactions are not altogether infrequent in dementia præcox.

Negativism is thus not an elementary symptom, but a collective idea, comprising a number of symptoms, which are similar one to another, in that, in the different areas of psychic activity precisely that is left undone or the contrary is done which one would otherwise expect under the existing conditions. Negativism most commonly involves a repelling of outside influences; it can express itself, however, as an inhibition or perversion of inner processes. Not even the repelling of outside influences is always founded on the same genesis, and in a given case, we shall see, several motives operate together, in order to bring about the repulsion.

The idea of negativism is not always limited in this way. Kraepelin[2] describes it under the title of weakened influence of the will and designates it as "the instinctive resistance against every outer influence of the will." This expresses itself according, to the author in seclusion against outer impressions, in inaccessibility to every outer communication, in resistance to every demand, which can culminate in the systematic performance of exactly opposite actions. The latter is not always simply an exaggerated opposition, a "weakened influence of the will," but probably a suggestibility in a negative sense. Kraepelin does not mention inner negativism explicitly as belonging to negativism: yet for him the blocking of the will is only a partial expression of general negativism. The Kraepelinian idea of blocking is composed of two different things. What we mean by this name is a sudden arrest of psychic events that is often observed in thinking. It is one of the usual schizophrenic symptoms and has its analogy in the arrest of thought in the healthy which is produced by some affect (terror, examination fright).

[2] Psychiatrie, 8. Aufl., I, 380. Barth. Leipzig, 1900.

(To be continued)

Periscope

Brain

(Vol. 34. Part 1. 1911)

1. The Sense of Pressure in the Face, Eye and Tongue. William F. Maloney, and R. Foster Kennedy.
2. Displacement of the Cerebellum from Tumor of the Posterior Cranial Fossa. W. G. Spiller.
3. On the Functions of the Choroid Glands (Choroid Plexuses) of the Cerebral Ventricles and its Relation to the Toxicity of Cerebro-Spinal Fluid. S. P. Kramer.
4. Epidemiology of Poliomyelitis. F. E. Batten.

1. *Pressure Sense.*—Maloney and Kennedy have contributed a masterly study of the pain pressure sense in the face, after removal of the Gasserian, or after division of the fifth root. They have endeavored to ascertain the relationship of pressure-pain sense in facial palsy, and have also considered the relationship of the hypoglossus to tongue sensation. Their own summary is as follows: (1) The fifth nerve must be regarded as the essential path for those impulses from the face which affect consciousness as sensations of pressure touch; (2) after removal of the Gasserian ganglion pressure-pain may persist unimpaired in the face and tongue, but never in the eye; (3) the seventh nerve contains no pressure sense fibers distal to the Fallopian canal; (4) the seventh nerve in the Fallopian canal is associated with pressure-pain fibers (low threshold mechanism) conveying impulses from pressure up to about four kilos, from the skin muscles and bones of the facial muscular apparatus; (5) these low threshold pain fibers pass through the regions of the fifth roots before entering the Fallopian canal; (6) the sympathetic subserves a general crude sensibility to pressure-pain (high threshold mechanism) which, sometimes, may persist alone after removal of the Gasserian ganglion; (7) the peripheral twelfth was not found to convey any form of sensation to the tongue.

2. *Displacement of Cerebellum.*—Spiller calls attention to two forms of displacement of the cerebellum resulting from tumor of the posterior fossa—a lateral displacement in which the cerebellum is nearly at a right angle with the brain stem, and an upward displacement in which the tentorium is much distended and the occipital lobes are widely separated by the dislocated cerebellum. These displacements constitute serious complications from the point of view of surgical removal.

3. *Choroid Gland Function.*—The author calls attention to the glandular structure of the choroid plexuses and has stripped the plexuses from the lateral ventricles of a dog, rubbed them up in normal saline solution, and found that the effects of the blood pressure are similar to those obtained from the cerebrospinal fluid. He also finds an increase in choroid depressing substance in the cerebrospinal fluid of patients with delirium tremens.

4. *Poliomyelitis.*—Batten discusses the term, preferring the word polioencephalomyelitis, then deals with the nature of the virus, the history of past epidemics, certain details of modern epidemics, the epidemics in Great Britain in 1908, 1909, 1910, and the distribution of the disease in London in 1904, and a bibliography. Among other things he says: "From the evidence which has been brought forward, one is justified in regarding poliomyelitis as an infective disease occurring in epidemic form during the months of July, August and September. It tends to affect children rather than adults. It is probably communicated from person to person, or may be carried by a person who presents no sign of the disease. The resemblance of the disease to rabies suggests the possibility of some animal infection, but none has yet been found. The disease can be communicated to the monkey, and passed from monkey to monkey. The infectivity of the disease is not great, for many persons in the closest contact with the infected escape, and monkeys living in the same cage with infected monkeys fail to contract the disease. But little is known of the incidence of the disease in London. That it occurs every summer, and with greater frequency in some years than others, is known. But it is not known if it affects one district more than another. It is maintained that the disease should be notifiable whenever there is liability of its being transmitted from person to person, provided that the disease itself or its sequelæ are a serious detriment to health, or a danger to life. That poliomyelitis is detrimental to health no one will deny. That poliomyelitis can be, and is, transmitted from patient to patient has been made evident in all the recent epidemics investigated.

The advantages of notification are great. It will lead to the general recognition that the disease is infective, and will tend to prevent its dissemination by contact. Notification will show the prevalence of the disease, and the investigation which should follow must throw light both on the cause and means by which the disease is disseminated. The infectivity of the disease is not great and the isolation of the infected should diminish the incidence of the disease on the community, and thus prevent the effects which are so disastrous to the usefulness and happiness of many lives.

JELLIFFE

Deutsche Zeitschrift für Nervenheilkunde

(Band 41, Heft 4 and 6)

1. Symptomatology of Tumors of the Hypophysis. SCHNITZLER.
2. Diseases of the Cerebellum. FICKLER.
3. Neurovascular Diseases. OPPENHEIM.
4. Physiology of Finger Movements. HERZOG.
5. Forearm and Hand Fibers in the Pyramidal Tracts. KEHRER.
6. Tetany of the Sphincters. IBRAHIM.
7. Disturbance of Temperature Regulation. BRACH and BAUER.
8. Thrombosis of Posterior Cerebral Artery. GRÜNWALD.

1. *Hypophysis.*—Histories of two patients who came to autopsy with illuminating discussions as to the eye-ground changes and causes therefor and the relation of acromegaly to hypophysis tumors.

2. *Cerebellar Diseases.*—The author had the opportunity of observing

cases of epilepsy, idiocy and insanity associated with the cerebellar symptom complex. An excellent report of the anatomical and clinical findings is given. In the first case, one of chronic alcoholism and imbecility, he found degeneration of the coordinating system. Pathological changes were noted in the fronto-pontine, temporal-pontine paths, the transverse paths of the pons, the pontine nuclei, the cerebellar peduncles, the cortex of the cerebellum, etc.

In the second case besides imbecility and epilepsy the cardinal symptoms of cerebellar disease were present. Macroscopically no changes were noted, but microscopically, a system-like degeneration of the ganglion cells was noted over the entire coordinating centers.

The third case was one of late epilepsy and cerebellar symptom-complex following arteriosclerosis. The cerebellum showed an arteriosclerotic atrophy. Cases 4 and 5 were hereditary cerebellar ataxia. Among the changes were involution of the cerebrum. The Purkinje cells showed the same degeneration as seen in amaurotic family idiocy, general paralysis. The changes in the cerebrum also corresponded to those seen in general paralysis, and the author raises the question, whether all cases of Friedreich's ataxia and family cerebellar ataxia have not hereditary syphilis as their basis.

A classification of cerebellar diseases is offered by the writer.

3. *Neuro-vascular Disease.*—A study of the relations between cardio-vascular disease and the nervous system. The author reports a series of clinical cases observed over many years.

He is convinced that a definite cardiac lesion may be produced by a heart neurosis, and cites cases in which true angina pectoris arose from a heart neurosis.

Also a congenital narrowing of the vascular system plays an important part in the true dysbasia angiosclerotica of which the angiospastic neurosis is only the early stage.

4. *Finger Movements.*—It is difficult to appreciate correctly muscle movements. Anatomical studies give a crude and only partial picture of their function. The author's study relates to the action of the interossei, lumbricales and extensors. Early cases of paralysis in which passive movement was still intact were the cases selected for observation. His conclusions show that for extension of the 2d and 3d phalanges of the 2d to the 5th fingers not only the interossei but also the extensor communis digitorum and the extensor minimi digiti and indices play their part.

5. *Pyramidal Fibers.*—Clinical and pathological report of a case which according to the writer proves, contrary to Fabritius, that the motor fibers in the medulla and spinal cord are completely mixed.

6. *Temperature Disturbances.*—Study of the disturbance in the temperature regulation in nervous diseases. The authors' results coincide with those of other observers, but they attribute the disturbed regulation to a vaso-constrictor paralsyis rather than to a vaso-dilator irritation.

7. *Thrombosis of Cerebral Artery.*—Clinical and pathological report of a case of syphilitic thrombosis of the posterior cerebral artery, which caused a lesion in the crus and produced a hemiplegia alternans.

S. Leopold (Philadelphia).

Monatsschrift für Psychiatrie und Neurologie

(Vol. 29, No. 1. January, 1911)

1. Contribution to the Histo-pathology of the Spinal Cord in Dementia Arteriosclerotica and Senilis. G. Lafora.
2. Contribution to the Clinical and Anatomical Features of Traumatic Hematomyelia. L. Laquer and H. Vogt.
3. The Effect of Vasotonin on the Circulation in the Human Brain. A. Hirschfeld.
4. Affect-epileptic Attacks of Neuropaths and Psychopaths. Dr. Bratz.
5. Contribution to the Cytological Study of the Spinal Fluid. S. Szecsi

1. *Spinal Cord.*—The changes in the ganglion cells consisted in atrophy, pyknosis, pigmentary and fatty degeneration, tigrolysis, eccentric location of nucleus and of nucleolus, with swelling or vacuolar degeneration of the same. Neurofibril stains showed degeneration and fibrillolysis. The longitudinal nerve fibers were little changed. There was a diffuse neuroglia increase. The vessel walls showed hyperplasia of intima and media and occasionally of adventitia. Hyalin degeneration of the wall was seen and vessel "packs" were occasionally met with. Scavenger cells (Körnchenzellen) were common, their granules being of fat, pigment and protagon. Lymphocytes and a few plasma cells were found in a case of possible syphilitic origin. The difference between the findings in senile and in arteriosclerotic dementia is chiefly quantitative. The degenerative processes were more pronounced and fat and pigment present in much greater quantities in senile dementia, while the vessel-wall changes were perhaps greater in arteriosclerotic dementia. The article is well illustrated with colored plates.

2. *Hematomyelia.*—By being caught in a piece of machinery a young man received a luxation of the cervical vertebræ from which he died a few days later. A large hematomyelia was found extending through several segments and in one place, a whole piece from the anterior horn of some distance above was found in the hemorrhagic space, having been so dislocated by the injury.

3. *Vasotonin.*—A test of the effect of this drug on the cerebral circulation was made by an apparatus arranged for the purpose upon the head of a man with a large surgical opening in his skull. It was found that, after administering the drug, there was a dilatation of the cerebral arteries with corresponding diminished tension, but without alteration in heart's action or in volume of blood. Excellent results have already been reported in arteriosclerosis with high blood-pressure and the author discusses the possibility of relieving cases of melancholia which are accompanied by this symptom.

4. *Affect-Epileptic Attacks.*—A continued article.

5. *Spinal Fluid.*—It is becoming increasingly important to make a morphological examination of the cell-content of the spinal fluid. The author gives the technique of two staining methods which he claims give beautiful results. The preferable is as follows: After drying in an incubator the preparation is stained in Leishman's mixture for forty seconds, then the stain is poured off and the cover-glass transferred to a glass containing five drops of Leishman's stain in ten c.c. of distilled water. After twenty seconds in this the specimen is washed in distilled water and mounted. The other technique requires fixing on a copper plate at 130° and then for

thirty seconds in equal parts absolute alcohol and a hot-saturated solution of mercuric chloride in physiological salt solution. The staining is for five minutes in Pappenheim's solution, followed by differentiation in absolute alcohol. Szecsi has found it possible to bring about the regeneration of the cells in the spinal fluid by washing them with physiological salt solution after the manner of washing blood corpuscles.

J. W. Moore (Central Islip).

Revue Neurologique

(Vol. 19, No. 9. May 15, 1911)

1. The Periodic Dysthenias (Periodic Psychosis or Manic Depressive Psychosis). R. Benon.
2. The Paths of Conduction of Sensation in the Spinal Cord. Karl Pétrén.

1. *Periodic Dysthenia.*—The depression which is present in the manic depressive psychosis is entirely different from melancholia and is really an asthenia; and the mania is a hypersthenia. The asthenia is expressed by muscular and mental feebleness. True melancholia is characterized by the onset of a painful emotion; a secondary, progressive asthenia proportionate to the moral disturbance; the development of more or less marked delirious ideas in relation to the primary emotion, hallucinations and mental confusion; termination by lysis, gradual disappearance of the trouble; and the rarity of recurrence. The periodic asthenia on the other hand is recognized by: Generally the sudden onset of an asthenia which is primary and fundamental; the persistence of the asthenia in about the same degree during the course of the attack; the mental disturbance is caused by the thoughts of the social consequences which result from the patient's asthenia; rapid termination of the attacks; and the periodicity. This conception of manic depressive psychosis makes it a nervous disease rather than a mental affection.

2. *Conduction of Sensation in the Spinal Cord.*—Pain and temperature sensations are conducted upward in the lateral columns opposite the side which they enter. Tactile and muscular sensibility are conveyed in the posterior column in the same side but muscular sense is also conducted upward by the direct cerebellar tract on the opposite side.

(Vol. 19, No. 10. May 30, 1911)

1. A Glioma of the Cerebellar Pontile Angle. Collin and Barbé.
2. Writer's Cramp Due to Hypotonia. Hartenberg.

1. *Glioma in the Cerebellar Pontile Angle.*—The patient, on coming under observation, was forty-three years old. Two years before she had been run over by a carriage, lost consciousness, and was taken to the hospital. The loss of consciousness lasted two days and the patient subsequently had a traumatic amnesia and suffered from shock. She also complained of a headache compared to blows with a hammer on the head. She was able to be up in about fifteen days. These symptoms persisted and about a year later became worse, confining her to bed on account of vertigo. When admitted to the hospital she was disoriented for time and space, showed marked mental retardation, and was very somnolent. Physical examination was negative. The reflexes were increased especially on

the right side. There was a doubtful Babinski on the right side. There was a slight pupillary inequality, a slight degree of nystagmus, and a slight choked disc. There was a paralysis of the left external rectus, the left facial and the left auditory nerves. At autopsy there was found a glioma the size of a nut in the cerebellar pontile angle. It is particularly interesting, from the clinical point of view, that the symptoms developed after the traumatism.

2. *Writer's Cramp.*—The patient was a bookkeeper, of thirty years of age, in good health but very emotional. He developed a writer's cramp six years before coming under observation, following a period of overwork. There were slight neurasthenic symptoms—fatigue especially in the morning, slight exaggeration of the reflexes. As soon as the patient would attempt to write, the fingers would become rigid in flexion. The writing was small, showed a tremor, and it was particularly difficult to make the descending lines in "g" and "p." The author demonstrated, by the use of his myotonometer, that there was a hypotonicity in the flexors of the hand, with conservation of the muscular force. No changes in electrical reactions. This hypotonia does not interfere with gross movements of the fingers but in finer and more complicated movements, such as writing, the nervous force necessary to overcome the hypotonia brings about tonic contraction. The cause of the hypotonia is not known and treatment was without avail.

C. D. CAMP (Ann Arbor).

Annales Medico Psychologiques

(Vol. 3, 1911. No. 2)

1. Asthenia Following Pain. TASTEVIN.
2. General Paralysis and Conjugal Tabo-paralysis. HANNARD and GAYET.
3. Motor Excitement. NADAL.
4. A Visit to the Farm Colony at Uchtspringe. LADAME.

1. *Asthenia Following Pain.*—Circulatory and respiratory phenomena and motor agitation are well recognized reactions to pain stimuli; but less well known is the intellectual and muscular prostration which in some degree, normally follows all mental and physical suffering. Tastevin studies analogous prostration or asthenias arising in morbid psychic states. A series of interesting cases are briefly reported in which "affects" such as epigastric sensations, anxiety and hunger spontaneously and inexplicably occurred periodically, abruptly appearing, and, as abruptly, vanishing. "Towards midnight," one patient narrates, "I awake with acute pain in my belly . . . I have a canine, a voracious hunger. I devour anything. I gnaw like a dog with a bone. The pit of my stomach seems to suck in food, just as a mouth sucks. I deplore my want of teeth. I feel I can't eat fast enough; but, after only a biscuit or two, my hunger disappears." These attacks were usually followed by a prostration which gradually lessened; but on one occasion, instead of this customary lassitude, a state of exaltation, a feeling of well-being, of happiness, of rejuvenation ensued.

Analogous post-epileptic conditions are reported and the author suggests that asthenia and mania are merely different aspects of the same process, just as cold and heat are expressions merely of degrees of temperature. A second communication on this subject will appear in the

next issue of the *Annales*. The author promises then to show that these asthenic or prostrate states are clinically distinguishable from melancholia.

2. *Conjugal General Paresis.*—The paper is based on a study of the cases of general paresis admitted to the asylums of Armentières and Bailleul in the Department du Nord, from January 1, 1871, till July 1, 1909. In this, the first half of the paper, only the literature of the subject is dealt with. As the cases mentioned in this historical résumé are all older than the discovery of the Wassermann reaction, each has served as a stimulus to the discussion of the rôle of syphilis in the causation of general paralysis. And as in any other condition in which only presumptive evidence is available, the conclusions reached swayed from one extreme to the other. Since we can now demonstrate the syphilitic taint in practically all paretics, it is of great interest to review these reports, to see precisely how the evidence formerly proved misleading.

3. *Motor Excitement.*—Nadal relates a highly interesting case of a man who subsequent to syphilis and typhoid gradually developed alternating phases of excitement and of depression. In one such attack he wrote, published, edited and sold a newspaper; he successfully conducted a campaign against municipal graft; and he procured his election to the town council. But his specialty during his hypomanic states was record distance walking. From Paris to St. Petersburg, to Moscow, to Vienna, to Jerusalem, and the near East; from New York to Chicago and back he walked; in four continents he covered vast distances; and thus he gained a national notoriety. He used to start off on his pilgrimages to the strains of the local band and the cheers of his admiring townsmen. His times were officially controlled, so it is proved that he frequently covered more than eighty kilometers per day. Hence Nadal argues that during the hypomanic bouts the patient's strength must have been increased. His peregrinations were punctuated by sojourns, more or less prolonged, in asylums. Among the attainments of his lucid moments was the writing of a very readable book narrating his travels.

The slow evolution of the disease, the persistence of this tendency to walk in attack after attack, and the notoriety achieved by the patient's morbid phenomena make the case of particular interest.

WILLIAM J. MALONEY (New York).

Review of Neurology and Psychiatry

(Vol. IX, No. 5. 1911)

1. The Contralateral Plantar Reflex. ARTHUR WILLARD FAIRBANKS.
2. The Diagnosis of Cerebral Syphilis. D. K. HENDERSON.

1. *The Contralateral Plantar Reflex.*—This article is accompanied by diagrams. Descriptions of these diagrams form such an integral part of it that a satisfactory abstract cannot be made. The writer states that at present it is difficult to explain the multiple variations in the plantar reflex phenomena; but he believes, with others, that the extensor response is a purely spiral reflex, the flexor response a cerebral reflex. A central motor neurone-segment constitutes part of the flexor arc. A lesion in this segment breaks the arc, and the flexor reflex is lost, and replaced by the spinal extensor phenomenon. Explanations must be purely hypothetical. Granted, however, that we accept the above view in regard to the nature of the flexor reflex and assuming that some of the fibers of the

direct pyramidal tract are are in fact actually direct, the several forms of contralateral reflex are hypothetically more easily explainable and he discusses the various forms on this basis.

2. *The Diagnosis of Cerebral Syphilis.*—There is no pathognomonic sign. The interval from infection only helps when near the original infection. The type of onset is usually acute, with headaches, dizziness and paralysis of cranial nerves. The type of onset is more insidious in general paralysis. Euphoria and grandiose ideas are more frequent in cerebral syphilis than is usually admitted. Argyll-Robertson pupils are extremely rare in cerebral syphilis; also distorted speech. There is less tremor than in general paralysis in the writing and no distortion. The Wassermann reaction may frequently help to eliminate general paresis.

C. E. Atwood (New York).

Deutsche Zeitschrift für Nervenheilkunde

(Band 42. Heft 1 and 2)

1. Studies of the Cerebro-spinal Fluid. V. Reichmann.
2. Marasmus in Cerebral Disease. A. Münzer.
3. Focal Disease of the Brain. A. Josefson.
4. Carcinomatous Meningitis. E. Schwartz and A. Bertels.
5. Neurofibromatosis Universalis. P. A. Preobraschensky.
6. Acquired Myotonia. G. Grund.
7. Tactile Paralysis. T. Kato.
8. Recurrent Oculo-motor Paralysis. F. Shionoya.
9. Erythromelalgia. J. Shimagona.
10. Studies in the Sympathetic System. T. Aoyagi.

1. *Cerebro-spinal Fluid.*—Reichmann's studies were mostly of the cerebro-spinal fluid in various pathological conditions. His results differed somewhat from those of other observers. Considerable variation was noted in the amount of the various organic and inorganic substances. Beside the substances usually present must be numbered lactic acid and sugar. Ammonia was never present excepting in cases of nervous diseases.

Experimental injections of the spinal fluid of epileptics into animals failed to produce any symptoms.

2. *Cerebral Marasmus.*—The author discussed its manifestations and its possible origin. Marasmus was seen in a severe degree in progressive paralysis, and in varying grades in other psychoses. The body weight in incipient psychoses decreased despite the best nutrition, and increased only when improvement of the psychoses began. Various theories were discussed as to the cause, especially its relation to disturbed internal secretion, and the production of specific secretion by the ganglion cells.

3. *Focal Disease of Brain.*—This article is based upon the study of 3 cases with necropsy of the Wernicke predilection type of hemiplegia. A disassociated monoparesis according to Wernicke distinguishes a cortical lesion from one in the internal capsule. The author found this to be true in his cases. A careful study should be made of the onset and character of the paralysis.

4. *Meningitis.*—Lumbar puncture showed large cells of an epithelial character. The clinical symptoms indicated a meningitis. At necropsy no

tumor was noted, but in the arachnoid space especially on the convexity of the brain, masses of cells were noted lying free.

5. *Neurofibromatosis.*—A clinical case with necropsy is reported. Only the peripheral nerves were involved. The case showed no special clinical symptoms. The author believed the connective tissue originates from the vessels, from which area it spreads into the endoneurium and Henle's sheath.

6. *Myotonia.*—A study based upon the report of a clinical case.

7. *Tactile Paralysis.*—Report of two cases, one with necropsy, in which the writer illustrates the value of sensory disturbance in cortical lesions. In both cases sense of position, localization and touch were affected while sensation for heat and cold was little affected and pain hardly at all. According to Mills and Oppenheim the author states that this partial hemianesthesia is characteristic for cortical affections and with hemiataxia and astereognosis forms the triad of symptoms in cortical parietal lobe lesions.

8. *Oculo-motor Palsy.*—Of 100 cases reported in the literature only 4 have come to necropsy. In the author's case the oculo-motor palsy was due to a fibrous overgrowth in the right oculo-motor nerve, to which was added a tuberculous, sero-fibrinous meningitis.

The migraine according to Massalongo and others was explained by the exacerbations of the inflammatory process and consequent transitory hyperemia. Plarec held the view of a periodic venous swelling of the hypophysis. Shionoya believed with Moebius that a slow-growing tumor could cause a gradual stimulation of the surrounding sensory nerves, the gradual summation of stimuli producing the attacks.

9. *Erythromelalgia.*—Two cases are reported, one with pathological findings. The first case showed a degeneration of the peripheral nerves and blood vessels as the basis of the process, similar to the findings of Weir Mitchell, though the author believed with Cassirer that a functional disturbance may produce the picture as his second case seemed to illustrate.

10. *Sympathetic System.*—This paper is based upon the microscopical study of 2 cases of Basedow's disease, in which the Bielschowsky stain was used. The author found distinct changes in the ganglion cells of the sympathetic system, while the axones and dendrites appeared normal.

S. Leopold (Philadelphia).

Book Reviews

LOCALISATION MOTRICE ET KINESTHÉSIQUE (Les noyaux masticateur et mésencéphalique du trijumeau chez le lapin). Par Edouard Willems, Assistant à l'Institut d'Anatomie de l'Université libre de Bruxelles (Institut Warocqué). Extrait de la Revue "Le Névraxe," Vol. XII, 1911, pp. 9–224.

In this study Willems is concerned with the structure and functions of the nucleus radicis descendentis (noyau mésencéphalique) and the nucleus motorius (noyau masticateur) of the nervus trigeminus, as these appear in the rabbit. By way of introduction he gives an excellent outline of the literature touching these nuclei. His findings are briefly as follows:

The nucleus radicis descendentis of one side contains 1,578 vesicular cells (p. 108) arranged in a column lying at the junction of the dorsal and ventral plates (fig. 4, p. 40). This column extends caudad from the level of the thalamus in the fetus—or the caudal edge of the colliculi superiores in the adult—to the level of the nucleus motorius. In their general appearance these cell bodies are similar to those in the spinal ganglia.

The nucleus motorius is composed of an oval mass of 2,942 cells—2,642 large and 300 small (p. 108)—which have the typical characters of efferent neurones of the first order. This nucleus is situated in metencephalon at the level of the emergence of the portio minor of the nervus trigeminus. The total number of cell bodies in both nuclei (of one side) is therefore 4,520.

The portio minor of the nervus trigeminus contains 4,859 medullated fibers (the average of four determinations on fully grown animals). This total may be further analyzed into 3,014 fibers of large diameter and 1,845 of small diameter (Table IV, page 147).

From the relation between the number of cells in the two nuclei combined (=4,520) and the number of medullated fibers (=4,859) in the portio minor, Willems concludes that all the fibers from both nuclei unite in this division of the nervus trigeminus, there being no other source from which these fibers could come. He has observed further the splitting (i. e., division into two or more) of the fibers arising from the cells of the nucleus radicis descendentis before these enter the portio minor and this phenomenon, so far as it goes, would help to explain the excess in the number of fibers observed.

It is further possible that the number of small cells credited to the nucleus motorius has been underestimated—which would also help to reduce the disparity in the two enumerations—although as the numbers show, this disparity amounts to an excess of only 339 fibers, or about 7 per cent. of the total number of cells.

The portio minor of the nervus trigeminus supplies in the rabbit nine trigeminal muscles (p. 24).

The masseter, pterygoideus internus, sphenoidalis (distinguished and described for the rabbit by the author) pterygoideus externus, digastricus

(anterior belly), temporalis, mylo-hyoideus, tensor palati and tensor tympani.

All the muscles in the domain of the nervus trigeminus are in the last analysis derived from the adductor or elevator of the mandibular arch of fishes (p. 31).

Excepting the digastric muscle—which receives about 200 fibers from the trigemino-facial plexus (p. 172)—all the muscles named above receive their entire innervation from the portio minor.

The evidence for this statement is based on the distribution of the portio minor as shown by dissection and on the chromolysis in the two nuclei following excision of the muscles or extraction of the nerves supplying them.

In the nucleus motorius a study of those cell groups which undergo chromolytic changes after operation makes possible a very complete reconstruction of the entire nucleus. Its different portions can thus be assigned to given muscles.

On the other hand, for causes not yet known, the chromolytic reaction can be obtained simultaneously in only about one half the cells which constitute the nucleus radicis descendentis (i. e., in 815 out of 1,578 cells). Moreover, the cells which do react are not characteristically grouped for the several muscles.

Why the "axone reaction" does not appear in all of the cells of this nucleus is not at the moment clear. Nevertheless it is important to note that it does appear very evidently in more than half of the cells constituting the nucleus. It is therefore proper to emphasize the fact that there is conclusive evidence that fibers from *both* nuclei are distributed to several of the muscles, notably the masseter, sphenoidal, temporal and tensor tympani, while on the other hand there is some evidence—though less satisfactory—that the innervation of the remaining five muscles is also from *both* nuclei. It follows that certainly the four muscles above named —and probably all nine—receive a double nerve supply.

Willems is of the opinion that the fibers in the portio minor of one side are all from homolateral cells.

The central connections of the two nuclei are not of the same type. The cells of the nucleus motorius have characteristic motor connections, while those forming the nucleus radicis descendentis do not have motor connections, but on the contrary are largely associated with secondary sensory pathways. The distinction is sharp.

The histological differences between the two nuclei are also notable. In the nucleus radicis descendentis the vesicular cells—consisting of a large and a small form—give rise to but few minor dendrites. One main dendrite, however, leaves the cell to pass in the direction of the bundle of fibers coming from the nucleus motorius.

These outgrowths sometimes split and generally exhibit a rapid decrease in diameter as they pass away from the cell body—the so-called "conical diminution."

Moreover, these outgrowths arise without any initial constriction such as is characteristic of the axone, but, on the other hand, always give rise to one or more small branches which do have the initial constriction and general appearance of axones. Many of these latter pass to the cells of the nucleus motorius and there terminate about them.

In contrast to this arrangement, the cells of the nucleus motorius have typical dendrites and axis cylinder processes, which latter form a well-defined root bundle that passes out in the portio minor.

Aside from the axones, coming from the nucleus radicis descendentis, there end around the cell bodies and dendrites of the neurones forming the nucleus motorius a mass of terminals derived from a number of other sources.

Many of the foregoing observations evidently suggest that the nucleus radicis descendentis is sensory in function.

If that were the case, then we might expect that its fibers in the portio minor and to the several muscles would be present in about the same proportion as the sensory fibers in the muscular nerves of other mammals.

If the number of fibers from each nucleus corresponds with the number of cells in each, then about 35 per cent. of the fibers would come from the nucleus radicis descendentis. This is just above the lower limit for the number of sensory fibers in the muscular nerves (cat) as given by Sherrington ('94–'95) (p. 138).

On the other hand, the axone reaction shows that the masseter, sphenoidal and temporal muscles are connected with 1,199 cells in the nucleus motorius and 800 cells in the nucleus radicis descendentis. Thus the latter are about 40 per cent. of the total number. Therefore about 40 per cent. of the fibers in these cases might be regarded as coming from the nucleus radicis descendentis.

It appears then that there is nothing in the numerical relations of the fibers from the two nuclei which opposes the idea that those from the nucleus radicis descendentis are sensory in function.

From his findings, of which the foregoing is but a bare outline, Willems makes the following argument:

1. With the partial exception of the digastric, above noted, the muscles in the domain of the nervus trigeminus receive all their fibers from the nucleus radicis descendentis and the nucleus motorius.

2. There is no instance known where the motor fibers going to a muscle arise from two separate nuclei diverse in structure and connections.

3. These two nuclei are plainly diverse in structure and connections.

4. The nucleus motorius is admittedly motor in function. The function of the nucleus radicis descendentis has heretofore been in doubt. Willems concludes that it is sensory, mediating muscular sensibility.

In more detail the reasons for this conclusion are the following:

The cells of the nucleus radicis descendentis are histologically similar to spinal ganglion cells. The axones, arising from the main outgrowth (dendrite), which forms the peripheral fiber, pass in large measure to the cells of the nucleus motorius and end about them.

The main outgrowths enter the portio minor and are distributed with the fibers from the nucleus motorius to the several muscles. Their proportional representation is that of the sensory fibers in a muscular nerve. The central connections of the cells of the nucleus motorius are with motor tracts. The central connections of the cells of the nucleus radicis descendentis are mainly with the nucleus motorius, but also with some secondary sensory pathways.

As the sensibility of muscles is mediated by afferent nerves, it seems most probable that the nucleus radicis descendentis is a sensory nucleus mediating muscular sensibility. These neurones are then afferent neurones of the first order, homologous with the neurones forming the ganglia of the cerebral or spinal nerves. The group is however unique in mammals in that it forms a nucleus having a single sensory function and also in

that it is permanently included in the wall of the neural tube. These conclusions are well founded and the paper constitutes a contribution of first-class importance to our knowledge of the mammalian nervous system.

For the establishment of these conclusions, quantitative tests have been largely used, and in this connection the author expresses appreciation of the quantitative work on the nervous system which has been published during the last fifteen years by American authors in the *Journal of Comparative Neurology and Psychology*. Since all of the author's applications of the quantitative tests did not bear directly on the main argument, some were not mentioned in the foregoing outline, but before closing this review we wish to comment on several of these, since they are important for our notions of the general architecture of the nervous system.

We shall discuss three points only:

(*a*) The splitting of fibers in their peripheral course.

(*b*) The classification of fibers in the portio minor, according to diameter.

(*c*) The relation between the weight of a muscle and (1) the number or (2) the diameter of the fibers passing to it.

(*a*) The fact that fibers split or divide in their course has been long known but the large proportion of splitting fibers has been appreciated only recently, and even yet the fact has not received due consideration in the text-books. For example, Dunn ('99, '02) showed that in the nerves to the frog's leg, splitting occurred in 10 per cent. of the fibers going to the thigh and 22 per cent. of those going to the shank. Dunn ('09) further showed in the case of a frog in which the legs were supplied by the sensory fibers alone, that practically the same amount of splitting occurred: namely, 10 per cent. in the thigh and 28 per cent. in the shank. Thus among the fibers going to the leg of the frog, *both the sensory and motor* split in considerable numbers.

From the physiological standpoint, the idea of splitting motor fibers meets no great obstacle, but the splitting of sensory fibers runs counter to the established doctrine of "local signs" in its usual form, and is therefore less readily accepted, although it may be noted that it seems to offer an anatomical basis for at least some cases of "referred pain."

In the study of the portio minor, Willems, dealing with both sensory and motor fibers together, finds that the combined branches of the portio minor contain 5,564 fibers as contrasted with 4,859 fibers in the trunk at the point of emergence. Thus there is an increase of 703 fibers or 14.4 per cent. (Table IV, p. 147) due to splitting.

At the same time he observed within the metencephalon, as previously stated, a splitting of the fibers arising from the cells of the nucleus radicis descendentis, thus contributing a new observation on the splitting of sensory fibers.

(*b*) In examining the cross-section of the portio minor, Willems finds fibers of both large and small diameter, and raises the questions of their grouping and significance.

Touching the grouping, it is desirable to form an opinion as to whether these fibers fall into two groups, the large and the small, or form a graded series from large to small (p. 139).

Boughton ('06) maintained in the case of the purely motor oculomotor nerve (of the rat and cat) the division into two groups, and the data of Sherrington ('94–'95) are susceptible of a like interpretation, although not so interpreted by Sherrington himself.

Willems found in the portio minor of the adult (see Table IV, p. 147, mean of last four records from mature animals) an average of 3,013 large and 1,845 small fibers, the small fibers being therefore 38 per cent. of the total.

On the other hand, he found in the case of the rabbit ten days old, an average of 2,493 large fibers and 773 small—the small fibers thus representing 23 per cent. of the total number. Since in the adult the cells of the nucleus radicis descendentis are about 35 per cent. of the sum of the cells in the two nuclei combined, and since the sensory constituent of a mixed nerve is usually credited with the great majority of the small fibers, Willems concludes that the small fibers form a recognizable group—that they come mainly from the nucleus radicis descendentis, and that their small diameter is additional proof of their sensory function. The relative number of small fibers appears to increase after birth, because, according to Willems, medullation takes place in them as a class at a later date than in the motor fibers. This argument is not convincing.

Boughton's observations were made on a purely motor nerve—the oculomotor—the sections being taken only shortly distad of the point of emergence. In this nerve there is a tendency for the fibers to appear in two groups—distinguished by their average diameters.

During post-natal growth the relative number of the small fibers increases, but these small fibers never become large fibers. Thus all of the characters which Willems uses to distinguish the sensory from the motor fibers in the portio minor occur in a nerve containing motor fibers only. In this connection Willems criticises, as without foundation, Boughton's statement that the small fibers (in the oculomotor) are those which "come in after the period of most rapid growth." The criticism is too severe. Probably many of the small fibers are present as unmedullated axones from an early period, but that some of the axones do grow in later is rendered probable from such observations as those of Ranson ('04) on the fibers which grow across the site of a lesion in the corpus callosum of the albino rat.

To sum up this matter it does not appear probable that Willems' general interpretation of diameter in relation to function in the case of the portio minor is correct, and it is also evident that the observations of Boughton cannot be used to support his conclusion.

(*c*) (1) Willems finds in general that the number of fibers per unit of muscle weight tends to increase as the muscle becomes lighter (= smaller). For the first seven muscles this increase is moderate, i. e., from 3.8 fibers per centigram of muscle in the heaviest muscle—the masseter—and 2.8 for the next heaviest—the pterygoideus internus—it increases regularly to 9 fibers in the mylohyoid, while in the case of the two remaining muscles, the tensor palati has 23 and the tensor tympani 333 fibers per unit of weight. This determination is unique, so that there are no observations with which it can be fairly compared.

Donaldson ('03) showed that the number of motor fibers passing to the muscles of the thigh and of the shank of the frog's leg are distributed to these divisions of the leg in proportion to the weight of the muscles. But as to the number of fibers to the individual muscles of known weight, we have as yet no data and hence the relations in this case do not bear on those found by Willems.

(*c*) (2) Touching the last point, on the relation between the diameter of the medullated fibers and the muscles which they supply, the existing observations are as follows:

Schwalbe ('81) from a study of the diameters of the nerve fibers to the arm and leg of the frog, concluded that the fibers of largest diameter had the longest course. This says nothing, however, concerning the diameter of fibers and the weight of the muscles which they supply, except by implication.

Dunn ('99, '02), working on the frog, determined that among the fibers entering the frog's leg, those of largest diameter ended in the thigh, and among the remainder, those of largest diameter in turn ended in the shank. This showed that Schwalbe's inference was incorrect that as a matter of fact the larger fibers ran the shorter course, but again did not establish, except by implication, the relation of the diameter of the fibers to the individual muscles.

Herrick ('02), however, did associate the diameter of the nerve fibers with the degree of development of the end organs, concluding that the more functionally active end organs received the fibers of greater diameter.

Willems finds that the distribution of the fibers of different diameter to the muscles innervated by the portio minor does not fit with any of the preceding views, expressed or implied. With the observation of Donaldson ('03) which apply to segments of the leg, no direct comparison is really possible, nor can Herrick's criterion be applied, so that the failure of Willems's observations to fit with those just cited has no bearing on the correctness of the latter, but indicates merely the need of further work in order to make such comparisons possible.

Willems's data do not show anything regular in the distribution of fibers of large diameter, but they do show, with the exception of the tensor tympani, that in the remaining muscles the proportion of small fibers tends to increase as the weight of the muscles increases, though more slowly.

Willems's results in this field lead him to make some interesting suggestions on the possible relations between the diameter of nerve fibers and the secondary growth of muscles as indicated by the size of the muscle fibers—suggestions well worth further examination.

Two general matters remain to be mentioned. The paper before us unfortunately contains a considerable number of misprints of all kinds, but especially misprints of numbers. Fortunately there is no instance, however, where these misprints seriously modify the argument, yet one consequence is that some of the numbers given in this review are different from those printed in the original paper. A carefully prepared list of corrections, in addition to the "errata" sheet which accompanies the paper, would add greatly to the usefulness of these observations. Graphique VI seems to have been omitted (see p. 128).

It is interesting to note that the author feels his labors to have been increased and his results complicated by the fact that he was obliged to use rabbits of various and unknown breeds and of undetermined ages. Failure to get this last datum made it necessary for him ultimately to exclude three out of seven of his series of quantitative and numerical determinations as they had plainly been made on immature individuals.

It is hardly necessary to enlarge on this topic, but since work of the sort here reviewed is bound to be more frequent in the future, it is evident that, as a first step, standard strains of animals of known ages should be generally available for the purpose of such studies.

HENRY H. DONALDSON.

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Original Articles

PRELIMINARY NOTE ON A NEW SYMPTOM COMPLEX DUE TO LESION OF THE CEREBELLUM AND CEREBELLO-RUBRO-THALAMIC SYSTEM, THE MAIN SYMPTOMS BEING ATAXIA OF THE UPPER AND LOWER EXTREMITIES OF ONE SIDE, AND ON THE OTHER SIDE DEAFNESS, PARALYSIS OF EMOTIONAL EXPRESSION IN THE FACE, AND LOSS OF THE SENSES OF PAIN, HEAT AND COLD OVER THE ENTIRE HALF OF THE BODY[1]

By Charles K. Mills, M.D.

Professor of Neurology in the University of Pennsylvania

The clinical history of the case on which this contribution is founded was published in the Journal of Nervous and Mental Disease, May, 1908, and also in the Contributions of the Department of Neurology of the University of Pennsylvania for the same year. The present communication is preliminary to a thorough study of the clinical phenomena of the case and of the ana-

[1] Presented at the meeting of the Philadelphia Neurological Society, held December 22, 1911. In the presentation of this case before the Philadelphia Neurological Society several lantern slides were shown exhibiting the patient's appearance when the face was at rest, when voluntarily moved and during laughing. Moving pictures were also shown for the writer by Dr. T. H. Weisenburg, of the patient when voluntarily drawing up both sides of his face and showing his teeth and also the absence of movement in laughing. These moving pictures strikingly exhibited the loss of emotional expression on the right side of the face.

tomical, physiological and pathological problems suggested by these phenomena and the findings at the necropsy and microscopical examination. It is my intention to present this more elaborate communication at the next annual meeting of the American Neurological Association, in Boston.

The symptom complex is I believe new, never having been described before the publication of the case by me in May, 1908. The entire investigation, clinical and pathological, sheds new light upon the functions of the cerebellum and of the cerebello-rubro-thalamic and the cerebello-rubro-spinal systems. From the point of view of blood supply the syndrome may be regarded as that of occlusion of the superior cerebellar artery.

The patient was admitted to my wards in the Philadelphia General Hospital November 29, 1907, about four years before his death. He was thirty-four years of age, and had a history both of gonorrhea and syphilis.

Ten weeks before admission he was suddenly seized with vertigo, accompanied with nausea and vomiting. He was confined to his bed for about a week. From the time of his seizure he became awkward in the use of his left hand, could not laugh on the right side of his face, although the expression of emotion was the same on both sides previous to the seizure, and he had a sense of numbness or impaired sensation throughout the entire right half of his body—face, trunk, and upper and lower extremities. He was also deaf on the right side, although this fact was omitted by oversight in my report published in 1908.

The symptom complex which this man presented when he was first examined in November, 1907, remained the same until his death on October 31, 1911. During this period he was in and out of the hospital, but his stay in the institution at each period was sufficiently prolonged to give excellent opportunities for the study of his symptomatology.

A summary of an examination made by me October 8, 1911, about three weeks before the patient's death gives the special symptom complex from which this patient suffered for more than four years, this not changing during all that time. Examinations were made for paralysis of ocular muscles, of the seventh and fifth nerve musculature, of the throat, of the limbs, trunk, viscera, etc., with negative results except as will be presently described; in

other words the syndrome was clear cut and very definite. In the left upper extremity ataxia was very marked as shown for instance by the finger-to-nose test. As the hand approached the face in the test the movements became very jerky and it was scarcely possible for the patient to touch his nose. In the left lower extremity ataxia was also marked, as shown by the heel-to-knee test. Power in both upper and lower limbs was however preserved. Careful tests showed that sensation in all its forms was fully retained on the entire left half of the body, but was lost to pain, extreme heat and extreme cold on the right half of the body—face, trunk, upper and lower extremities. Tactile discrimination was also greatly impaired as shown by the compass test. Light touch was preserved. The senses of deep pressure and of position and passive movement were normal on both sides and the patient showed no astereognosis in either the right or the left hand. Deafness in the right ear was complete. Voluntary movements in the face were entirely preserved, as demonstrated by such usual tests as wrinkling the forehead, closing the eyes, drawing up the face first to one side and then to the other, and then on both sides as in showing the teeth. In laughing, as had been shown in many other examinations and by the moving picture method, the patient's face failed to move on the right side.[2]

The patient died October 31, 1911. The brain closely examined by the naked eye showed a smallness of the branches of the left superior cerebellar artery and a depression over the left dentate nucleus, but nothing else externally, at least nothing of importance as regards the symptomatology above described. The brain was sectioned in several places with care so as not to interfere with subsequent microscopical investigations by serial sections. The cuts revealed a destructive lesion involving the left dentate nucleus and the cerebellum above this nucleus, including also the superior cerebellar peduncle. Degeneration was also evident to the naked eye in the right nucleus ruber, which body was much smaller than the left nucleus ruber. Many sections of the cerebellum, cerebellar peduncles, pons, crura, etc., have since been made in the laboratory of neuropathology of the University of Pennsylvania, under the supervision of Dr. Wm. G. Spiller, and

[2] In the present preliminary note many details of the general and neurological examination of the patient are omitted, the object being simply to present clearly the symptom complex and its pathological cause.

these show a well marked destructive lesion and secondary degeneration involving not only the dentate nucleus and neighboring cerebellar substance, but also the left superior cerebellar peduncle, to and including the nucleus ruber of the opposite side. A full report of the findings with photographs and other illustrations will be given in the completed article.

LEONTIASIS OSSEA—ACROMEGALY AND SEXUAL INFANTILISM[1]

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Under the term of leontiasis various conditions were formerly grouped, notably a form of leprosy with a predilection for affecting the soft tissues of the face and neck, and also a rare form of elephantiasis of the neck and face. When, however, leontiasis ossea is spoken of the confusion disappears, because the facial deformity is due entirely to bony malformation. As our knowledge of acromegaly increased, the number of reported cases of leontiasis ossea has dwindled until to-day hardly a recent report can be found.

In presenting the following cases under the heading of leontiasis ossea, I am actuated solely by the fact that the osseous malformation was limited entirely to the bones of the face and cranium and all other evidences of hyperplasia of connective tissue or bones of the extremity were entirely wanting. Moreover the presence of extreme manifestations of general and sexual infantilism in the one case and the presence of hypertrophy of the hypophysis in the other, show that we had to deal with a general disorder of metabolism and not merely with a local over-production of bone and I am inclined to the opinion that he had to deal with a mixed condition—a polyglandular disorder, somewhat akin to acromegaly, but not fitting entirely into this category, on account of the absence of enlargement of hands and feet and the soft tissues in general, and the presence of marked sexual and general infantilism.

Viewed from the standpoint of the most recent works on the functions of the hypophysis one of the cases presents the paradoxical symptoms of both the hyperpituitarism and hypopituitarism, and this together with the fact that no variations from the normal were found in the hypophysis has been my reason for

[1] Read at the thirty-seventh annual meeting of the American Neurological Association, May 11, 12 and 13, 1911.

bringing these cases to your attention and giving a review of the most recent conclusions of the physiology and pathology of the hypophysis.

Case No. I.—Charles M., aet. 21, native of Ohio, single, unmarried. Admitted to Cincinnati Hospital on December 2, 1909. Sent to Longview Hospital for the Insane on February 10, 1910. Died on March 21, 1910.

Family History.—Father was an alcoholic—also had syphilis. Whether or not before birth of this child could not be ascertained. Father died of alcoholic dementia.

Mother has always been well. Has an older son who is well. A younger son, aet. 16, who is said to have spinal trouble. Had one still-born child and one miscarriage at third month.

Personal History.—Was born normally, strong and vigorous. Was bright at school and passed through fifth grade. He enjoyed all out-door sports. At the age of 14 years mother noticed swelling at angle of jaws, more marked on left side. There never was any pain and boy was always in good health. He left school at 15 years of age and was a trusted errand boy. Later on he worked in a shoe factory, and was considered a good machine operative. Beginning at the age of 14 the lower portion of the face gradually enlarged. During this time he had "weak spells" which, infrequent at first, increased in number until he could not retain his position. During this time he smoked to excess.

From the age of 18 to 20 patient was unable to leave the house except at intervals, owing to general weakness. For one year preceding his admission to the hospital and especially for past eight months patient has been unable to walk. He has also become gradually demented. There is incontinence of feces and urine. *There has never been any headache, vomiting* or vertigo.

Nine weeks before admission mother says that he had spells with his head. Held his head as if in pain, became very nervous, cried and yelled very much.

During the past year there has been a gradual process of emaciation until the body is now reduced almost to a skeleton. The swelling has also extended to upper jaw and part of the nose.

Examination—Mental State.—Patient shows little or no interest in his surrounding, lies with closed eyes, cries out in a childish, whining way most of the time, day and night. Is unable to give any account of himself, complete absence of memory and almost complete dementia. It is necessary to feed him like a child. Passes urine and feces involuntarily. He has no orientation for time and place and does not know either doctors or nurses.

Head.—Frontal and temporal bones apparently normal. The lachrymal bones stand out on the nose and are about size of an

almond kernel. The remaining nasal bones show no enlargement. The superior maxillary bones are large, symmetrical, hard as billiard balls. The inferior maxillary bones are enormously enlarged so that patient can open the mouth only about one half inch. Eyeballs are bulging, marked incoördination of movements. Pupils are unequal, right larger than the left, very sluggish to light.

Examination for vision was made by Dr. Robert Sattler and was found to be normal. The papillæ are sharply defined and normal in appearance. There is no beard on the face.

Chest.—Emaciated, shows lack of development. Heart is normal in size and valves are normal. No enlargement of liver or spleen. Abdomen negative.

Upper Extremities.—Constant tremor when used, muscular power very weak, great emaciation. Marked rigidity, reflexes increased. Hands small and delicate.

Lower Extremities.—Legs can be moved only with great difficulty.

Reflexes are not increased. There is no loss of sensation as far as could be determined by heat or pin-pricking test anywhere on face, trunk, upper or lower extremities.

There is no ankle or patellar clonus, no Babinski sign. Slight tremor in the legs. Tendo Achillis reflex normal. Hands and feet smaller than normal. There are a few scattered hairs on the pubes and axillary spaces, rest of skin contains no hair.

The penis is small, undeveloped, the testicles are down in the scrotum but not as large as almonds.

Urinalysis.—1,018, alkaline, no albumin, no sugar.

Blood examination.—Hemoglobin 80 per cent., whites 9,600, reds 4,052,500, polys. 74 per cent., small 11 per cent., large 12 per cent., eosin. 2 per cent., transit. 1 per cent., mast. 0 per cent.

X-ray Report by Dr. Sidney Lange

The lateral radiograph of the head shows an extreme thickening of the bones of the base of the skull and face. In spite of the fact that a very hard tube was used, the X-ray seemed unable to penetrate the bones in the affected regions.

The orbital plate of the frontal, the body of the sphenoid and the basi-occipital are several times as thick and dense as normal. The sella turcica seems to be of usual size, but the anterior and posterior clinoid processes are much thickened. The cavity of the sphenoid is entirely filled in with dense bone. This bony overgrowth has rendered the orbits quite shallow. There are apparently no frontal or ethmoid cells. The superior maxilla is dense and structureless with no evidence of an antral cavity. The bony overgrowth is most marked in the inferior maxilla. The body of this bone is much wider than normal and is dense as stone, while

the angle and ascending rami are enlarged and sclerosed in proportion, and appear to be continuous with the superior maxilla. The teeth appear small and irregular. Owing to the density of the maxillæ only the crowns can be outlined. The rest of the skull does not share in this bony overgrowth. The forehead is sloping and the bones of the vault of the skull are not thickened, perhaps a little thinner and less dense than normal. The upper cervical vertebræ, although partly hidden by the great enlargement of the jaw appear undersized and of infantile type. The shape and size of the spinous processes resemble those of an individual of perhaps 12 years.

The radiograph of the hand shows a greatly retarded bony development. All the carpals including the pisiform are shown, but the epiphyses of the radius and ulna and those of the metacarpals and phalanges are still ununited with the diaphyses. The stage of bony development corresponds to that of an individual of 12 to 14 years.

Patient's mental condition caused his removal to Longview Hospital for the insane, where he died in six weeks after admission. Death was caused by general marasmus.

The autopsy was limited by the family to the head; the hospital report says that there was present pachymeningitis, with thickening of the pia and arachnoid; the cerebro-spinal fluid was markedly increased, more especially in the ventricles. The inferior surface of the crura cerebri showed indentations from bony pressure. The floor of the anterior fossæ is changed in appearance, resembling two domes, caused by the thickening of the horizontal plates of the frontal and lesser wings of the sphenoid. The sella turcica is smaller than normal, especially in the anterior posterior diameter.

The pituitary body was saved for pathological examination. It seemed smaller than normal.

Report of Paul G. Woolley, Professor of Pathology and Dean of the Medical Department, University of Cincinnati

The pituitary gland which you have submitted to me for examination had been preserved in Kaiserling and was therefore unsatisfactory for microscopic examination. Thin sections however were cut in paraffin and the sections stained with various methods. A large part of the glandular tissue showed a rather diffuse stain and no evidence of any definite pathological processes could be discovered.

Sections were also made from a pituitary in the laboratory which had also been fixed in Kaiserling solution. This gland was apparently, in size and in general appearance, a normal gland. There was no difference in the appearance between these two

glands. No chromaffin could be discovered in either. From the results of our examination we would say that the submitted gland was apparently, approximately at least, normal.

To review the case briefly we have a man whose face was never normal, who began to show signs of beginning enlargement of the lower jaw at the age of 14 from which time on the bony enlargement of lower and upper jaw gradually increased in a very symmetrical way except as to the lower jaw, involving all the bones of the face, except the nasal. The frontal and occipital bones were also thickened.

The soft tissues were never affected. At the same time the boy grew in height, but there was either no development or a retrograde change in the bony tissues of hands and feet and an absence of all secondary sexual characteristics and a progressive mental deterioration until complete dementia was reached.

This is not leontiasis ossea in the old acceptance of the term, and the complete absence of the involvement of the soft tissues of the face and the infantile condition of hands and feet, would hardly enable us to speak of acromegaly of the usual type. We nevertheless have before us a chronic progressive disease which ended in the man's death, and which clearly indicates a disturbance of normal body metabolism.

We might speak of a form of acromegaly, keeping in mind however that the case presents the contradictory signs of hyper- and hypo-activity of the hypophysis, and that the careful examination of the hypophysis showed the gland to be apparently normal in size, and that microscopically the gland sections of the anterior lobe could not be distinguished from sections of what were considered normal glands.

At any rate, the clinical picture approaches very closely to that of acromegaly, especially if we hold with Kohn, that hypogenitalism in cases like this indicates the diagnosis of acromegaly.

I will here introduce a similar case which during life was diagnosed as leontiasis ossea.

I present you a brief history and a report of the pathological examination through the courtesy of Dr. Robert Sattler.

Short History of Case B. (Dr. Robert Sattler.)

Was first seen at the age of fifteen; so far as could be ascertained had been ordinarily healthy during childhood up to the age of eleven; at that time the family moved to Florida, when the slight enlargement of the face began to be noticed. This increased very slowly and insidiously, and was most noticeable in the temporal and inferior maxillary region. Increase since that time has been rapid and more noticeable. The child has developed normally in other respects. Menstruation has always been regular.

Father and mother have been always healthy, no tubercular or

syphilitic history in the family. Picture of patient taken at six shows a perfectly healthy child, with no evidence whatever of any osseous enlargement. No evidence of any abnormality at any time of the thyroid gland. During the last two years there has been a perceptible but slow increase of the deformity in right superior maxillary orbital margin; the prominence of the left eye is very marked. There is no enlargement of the hands or of the feet. The nose and ears are normal and there is no hypertrophy of the soft tissues. The deformity is limited to the bones entirely, viz.: the inferior and superior maxillary, the temporal and frontal bones and the turbinated and septum of nose. Patient has complained of epiphora of the left eye, with enlargement of tear sac which lasted for several months, but disappeared without treatment. The lumen of left side of nose contracted, middle turbinated pushed against vomer, floor of inferior meatus raised by hard swelling and lumen much narrowed.

Vision at times very much reduced and discs in both eyes show atrophic changes.

Post-mortem Examination.—The calvarium was removed with great difficulty on account of the great thickening of the bones. After its removal the brain was removed without difficulty, there being at no place any adhesions between dura and pia; a large clot was found occupying the base of the brain anterior to the basilar process and overlying the body of the sphenoid and extending laterally into the middle fossa on each side, the hemorrhage evidently being the immediate cause of death.

Both inner and outer plates of the frontal portion of the sphenoid, the squamous portions of the temporal and of the occipital showed great thickening. The left orbital plate of the frontal was greatly thickened. The sinuses of the frontal were not entirely occluded, but the air spaces of the ethmoid and sphenoid were almost closed. The sella turcica was unusually deep and contained a large hypertrophied pituitary gland.

These cases are in every way similar except that a pituitary tumor was found in the second case. It strengthens the contention that perhaps leontiasis ossea is a form of acromegaly, but throws some doubt on the contention that, as we shall see later, pituitary hypertrophy in young individuals leads to giantism.

These cases open up the question of the relation of the hypophysis to growth in general and secondarily the inter-relations of the hypophysis and the sexual glands.

It is a pretty well accepted opinion, although not by any means unanimous, that every case of acromegaly shows a diseased condition of the hypophysis. Tumors or at least an increase in size

of the hypophysis have been found in nearly all cases of acromegaly. However, in equally large number cases of tumor of the hypophysis are on record in which there were no clinical manifestations of acromegaly. A few cases of undoubted acromegaly have been described in which the hypophysis has been found on microscopic examination to be normal in every respect. These latter cases, however, may be explained away on the assumption of Benda and more recently of Dean Lewis, that even in apparently normal sized glands we may have a condition of hypersecretion, as would be evidenced by a hypoplasia of the chromophile cells. B. Fisher goes so far as to say that not a single one of these cases of acromegaly which are on record with a normal hypophysis are free from objection; in other words, the hypophysis is always involved.

On the other hand Moyer, in a recent article, professes his belief that the impulse which causes the development of acromegaly always has its origin in the sexual glands, either the testes or ovaries, and that the hypophysis is only affected secondarily.

This may offer an explanation in this first case. The normal development of the testicles being absent, perhaps due to some inhibitory action, say of the adrenals, the stimulating effect of their internal secretion was wanting and led to a minus state of activity, on part of the hypophysis, and this in turn gave rise to the bony enlargement of the cranium. In this, as in other cases we meet with apparent contradictions.

The physiology of the hypophysis after 25 years of work, investigation and a perfect avalanche of literature is still unsettled. We know that it is a ductless gland which stands in intimate relation with the thyroid, the parathyroids, the thymus, suprarenals, the islands of Langerhans and the sexual glands. Like all ductless glands it secretes, according to Shaeffer, "hormones," activating and stimulating substances with obscure but important effects on numerous organs, ductless, sexual and others, as well as upon metabolism in the broadest sense, including growth.

It is also certain from the experiments that the anterior and posterior lobes have entirely different functions. We are mainly concerned with a study of the anterior lobes. Paulesco was able to show, in 1908 and his observations have been verified by Cushing, Homans, Crowe and others, that the pituitary body is

essential to the maintenance of life, that the total removal leads in the course of days or weeks to death from a cachexia hypophysipriva which resembles in many ways the cachexia strumipriva. Cushing states that partial removal of the gland leads to a peculiar adiposity, polyuria, glycosuria, shedding of hair, and occasionally unmistakable lessening of sexual activities even with atrophy of the testicle and ovaries.

Nobody has been able to produce a condition simulating acromegaly in an experimental way. Clinically and pathologically we have some facts relating to the absence or excessive function of the hypophysis.

Congenital absence of the hypophysis has been observed in cretins. Virchow found an almost entire absence of the anterior lobe in a new-born cretin.

Benda found a small defective hypophysis in a 38-year-old dwarf. Froelich's case was a dwarf. On the other hand the hypophysis is usually found greatly enlarged in giants, which has led to the theory that over-activity of the hypophysis in early life leads to giantism and later, after development has been concluded, to localized overgrowth, manifesting itself as acromegaly.

This question of growth and its relations to the functions of the hypophysis has received an interesting contribution when it was found by Erdheim and Stumme that the hypophysis is always enlarged in pregnancy, at times to two or three fold in size. This increase in size is found to be due to a true hyperplasia of the secreting cells of the anterior lobe. According to Kohn this increase of the hypophysis during pregnancy and lactation can be compared to what occurs in giantism. The pregnant woman is in a temporary state of overgrowth—not only does her own body increase in weight, but she grows an entirely new body within herself, and this demand for development is associated with a true hypertrophy and increase in function of the hypophysis. Early castration, before the completion of development, in both animals and men (eunuchs) is associated with an enlargement of the hypophysis, as well as overgrowth. Castrated animals grow larger than non-castrated, and so also eunuchs attain very often a large size. At the same time there is a change in secondary sexual characteristics, well known and needing no special mention.

When maturity has been attained, as Benda and Kohn have shown, castration is followed by an enlargement of the hypophysis,

but not beyond the maximum normal size. There is no doubt an inter-relation of the hypophysis and the testes and ovaries and the sexual function. Moyer (*Archiv. Gynecologie*, Band 90, p. 43) says that the impulse starts from the testes and ovaries and not vice versa and he looks, for instance, upon acromegalic changes as having their origin in the sexual glands and that the hypophysis is affected only secondarily.

Is sexual non-development or sexual infantilism in the adult a manifestation of hypopituitarism? In an experimental way we have the researches of Cushing, who states that partial removal of the gland leads to peculiar adiposity, shedding of hair, unmistakable lessening of the sexual activities and even to atrophy of the testicles and ovaries. Froelich's description of dystrophia adiposo-genitalis, small stature, infantile genitalia, hypotrichosis and an excessive deposit of fat, are looked upon as manifestations of hypopituitarism. Cushing, perhaps having in mind cases like the one described above, says that we may have an overlapping of symptoms, viz.: acromegaly with sexual infantilism, occasioned by a hypersecretion of one part of the gland and a diminished secretion of another.

This leads us to an opinion lately expressed by B. Fisher Frank. (*Zeitschrift für Pathologie*, Vol. 5, p. 587) that acromegaly is the result of a specific hypersecretion of the anterior lobe of the hypophysis. That dystrophia adiposo-genitalis is due to a damaged condition of the posterior lobe and the infundibulum. On the other hand, Kohn holds that hypogenitalism is associated with an enlargement of the hypophysis. It certainly was not true in our case.

The fact that a tumor of the hypophysis, as in the case of Schloffers and Hochenegg, caused infantile characteristics in the first and hetero-sexual characteristics in the second, does not prove that there was an increased activity of the hypophysis. The removal of the tumor in the above cases was followed by sexual changes toward the normal. There may just as well have been a diminution of the glandular activity as a result of pressure and a return of normal gland activity as a result of the removal of pressure. Kohn concludes however, that as a result of excessive function of the hypophysis the development of secondary sexual characteristics is inhibited. If this supposition is correct then our case is simple of explanation. Except that we are apt to asso-

ciate excessive function of an organ with an increase in size, although this is not necessarily true if we accept the researches of Benda and Lewis mentioned above. It is however of the greatest therapeutic importance, acknowledging the relation between the hypophysis and the sexual system, whether hypogenitalism causes hypoplasia of the hypophysis or whether, as Kohn would have us believe, that hyperfunction of the hypophysis leads to hypogenitalism.

Is the relation between these various organs of internal secretion vicarious in its nature, the overaction of one supplementing the want of activity of the other, supplying a certain minus of function, or is there a rivalry, an antagonism between them? Does the excessive activity of the one inhibit and cause a minus activity of the other. This interaction or interference of these various organs will lead to pluriglandular symptoms, but we must not conclude that there is of necessity pluriglandular disease. Primarily one may be diseased and the function of several others thereby disturbed. A plus action of the hypophysis may cause acromegaly and we may at the same time expect a hypogenitalism and a hypothyroidism (Kohn). There being an undoubted relation between the genital organs and the thymus and suprarenal capsules, we might, starting with hyperactivity of the pituitary gland, in addition to the above condition, find a persistent thymus and enlarged suprarenals. This system of correlation is complex and the symptoms will be numerous, if the dictum is true that a disease of one gland of internal secretion will interfere with the functions of the others. As generally understood to-day, hypersecretion of the hypophysis leads to excessive growth and in young individuals leads to giantism, either pure and simple or giantism with more or less acromegaly with general and sexual weakness. If it occurs after the completion of development, it manifests itself in localized overgrowth which clinically presents itself in the form of acromegaly.

Hyposecretion manifests itself in a lowered state of nutrition and growth, in dwarfism, in sexual infantilism and perhaps in the development of hetero-sexual characteristics.

As Cushing says, this is a convenient working hypothesis. It is probably not as simple as all this and on account of the interrelation of the hypophysis with the other ductless glands, the exact function of the hypophysis and the disturbances produced

by a diseased condition will be very difficult to determine and separate from those due to a disordered function of the other ductless glands, caused by the disease of the hypophysis.

Because of the obscurity involving this subject I believe it appropriate to give the conclusions which A. Munzer draws (*Berl. Klin. Wchnschr.*, 1910) from a very exhaustive review of the anatomy, physiology and pathology of the pituitary body. Concerning the physiology he says:

i. It is not positively proven, but probable, that the hypophysis is necessary to life.

ii. The functional mechanism of the hypophysis has not as yet been satisfactorily explained; the colloid is probably the most active secretion of the gland.

iii. The toxicity of the hypophysis is small and probably depends exclusively on the posterior lobe of the gland.

iv. Hypophysectomy causes a cachexia hypophysipriva which is very similar to cachexia strumipriva.

v. The hypophysis influences the circulatory apparatus through the posterior lobe.

vi. The hypophysis takes a part in regulating tissue metabolism.

vii. The hypophysis extract acts upon involuntary muscles and dilates the pupils.

viii. The hypophysis stands in correlation with other organs of internal secretion.

ix. The physiology of the hypophysis gives us no reason or explanation for the development of acromegaly.

His conclusions from the study of the pathology are as follows:

i. The pathological-anatomical processes of the hypophysis are (*a*) atrophic conditions; (*b*) hypertrophic-hypoplastic conditions; (*c*) tumors.

ii. We must distinguish between the clinical symptoms of hypophysis tumor, those which are caused by mechanical pressure and those which are due to a disturbance of the function of the gland.

iii. The eye-symptoms are the chief mechanical pressure symptoms.

iv. Acromegaly is probably not the expression of a primary change in the hypophysis.

v. The reason of the occurrence of dystrophia adiposo genitalis with hypophysis tumors has not been cleared up.

I omit vi and vii, as not bearing directly on our problem.

viii. With hypophysis tumors we have associated diseases of other organs of internal secretion causing diabetes, myxedema, etc.

ix. Acromegaly is a type of polyglandular disease.

Munzer's conclusions appear in a "Sammel-referat" and are based upon a study of all investigations, clinical and laboratory, up to 1910.

In view of the conclusions which he arrives at, I do not hesitate to broaden this discussion into a wider field, viz., that of the status thymico-lymphaticus, which is trying to be all-embracing. Among the objective diagnostic signs of this rather new clinical syndrome, we find nearly all the classical signs and symptoms of acromegaly, leontiasis and allied conditions. The most recent exposition of this subject is by Edmond von Neusser (*Ausgewahlte Kapitel der Klin. Symptomatologie und Diagnostic,* Heft. IV, Zur Diagnose des Status Lymphaticus). I here give a résumé of the diagnostic points of status lymphaticus, as are laid down in his paper:

"Of the objective signs of the hypoplastic constitution the following deserve special mention: High stature, giantism, dwarfism, partial and general deformity of the bones and skeleton in general, such as we see in osteitis deformans and acromegaly; also a slender and graceful bone development in normally tall and small individuals, large or small head, anomalies of the cranium, long arms and legs, persistence of epiphyseal cartilages, pasty, anemic complexion, abnormal deposits of fat, especially around the mammary glands, the lower abdomen and the hips, such as we see in the castrated. Also the presence of hetero-sexual signs which are associated with the non-development of secondary sexual characteristics, etc. In the same way we must consider the growth of hair, absence of beard, lack of development of hair on the trunk, arms, legs, but more especially on the pubes, a feminine type of mons veneris in the man, or a masculine type of hair development in the woman. Anomalies of sexual characteristics in the male are a high pitched voice, prominent Adam's apple, small penis, rudimentary testicles, small atrophic prostate, cryptorchism, aspermatogenesis and other signs of hypoplasia of the genitals. In just how far the feminine type seen in men is characteristic of the status thymo-lymphaticus, future investigation has

yet to show. In the adult, the chief diagnostic clinical features of status lymphaticus are the hypoplasia of the cardio-vascular system and the hypoplasia of the genitalia.

"Similar points as seen in men may be observed in contrast, in some parts, in women. A splendid growth of hair on the head, with a scanty growth on the mons veneris, absence of or late development of menstruation, hypoplastic uterus, small uniformly narrow pelvis, infantile state of the internal genital organs, masculine voice, with a masculine structure of the larynx, masculine hairy development, flat chest, small hips, are not to be overlooked as among the diagnostic signs of the status lymphaticus."

Viewed in the light of the above description of the diagnostic signs of the status thymico-lymphaticus it would not be difficult to arrange our case under this heading. Unfortunately, however, clinically the man had no enlargement of the tonsils, none of the lymphatic glands of the neck or groins showed any enlargement beyond what we might expect in a condition of general emaciation. Nor was the spleen enlarged. No autopsy of the trunk could be obtained and therefore it could not be determined whether the thymus was persistent or the adrenals enlarged.

After this discussion of the subject of the hypophysis we come back to our case in which clinically at least we can make the diagnosis of acromegaly. Whether or not we are to consider acromegaly and sexual infantilism as merely symptoms of a still more comprehensive disease, viz., status thymico-lymphaticus, remains to be seen. There are objections in our case to classifying it under either head, for as far as acromegaly is concerned we have found the hypophysis normal in size and microscopically not to be distinguished from sections of the normal gland. It is true, however, that owing to the fact that the gland was hardened in Kaiser ling the line of investigation of Benda and Dean Lewis could not be followed and stains made to bring out the chromophin cells.

There is likewise an objection to the consideration of the diagnosis of status thymico-lymphaticus, because the man had no enlarged tonsils, no marked enlargement of the lymphatics or spleen. Pathologically unfortunately the diagnosis could not be made, because a general autopsy was prevented.

It is however a very important case, owing to the absence of marked changes in the hypophysis, and may prove that when looking for the primary cause of the general disturbance of met-

abolism underlying acromegaly and sexual infantilism we must make farther researches.

That acromegaly has an undoubted relation to disturbances of the hypophysis the many cases on record of tumor and disease of the hypophysis clearly show and is so universally accepted that we always expect a tumor of the hypophysis when we diagnose the condition clinically. But the fact that hypophysis tumors often occur without causing acromegaly seems to indicate that whatever disturbance is caused in the functions of the hypophysis may be vicariously neutralized by some of the other ductless glands. Moreover, cases like ours seem to indicate that either excessive actions of the hypophysis can exist without a marked increase in structure, or that the normal action of the gland can be inhibited by the action of some other ductless glands and that the clinical picture as we have it in our case is one of hyposecretion. One fact, however, stands out prominently in this discussion. There are few cases of acromegaly on record in which some changes were not found in the hypophysis. On the other hand, changes in the other ductless glands are not at all constant and hence the line of investigation will continue in the direction of pathological changes in the hypophysis.

From a standpoint of therapeutics our case offers very little instruction. The only remedy for hyper-activity is to remove the gland. If we hold the theory of defective activity, we might feel that some results could be obtained in beginning cases by administering the extract of the anterior lobe. There is at least one series of experiments of this kind in which good results were obtained. I refer to the article of Kuh. On the other hand the experience of Salmon, Magnus, Levy, Schiff and Franchini in feeding large quantities of pituitary tablets, either in health or disease, were negative.

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THE SENSORY TRACT IN RELATION TO THE INNER CAPSULE.[1]

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Having obtained four years ago the material from a second case which has permitted us to draw conclusions regarding the position of the central sensory tract in relation to the inner capsule, it has seemed desirable to return to a discussion of this subject.

One of us, in association with Dr. F. X. Dercum,[2] in 1902, reported a case which afforded an opportunity for investigation regarding the position of the sensory fibers in a part of their course from the thalamus to the cerebral cortex. A man, aged 49 years, about 1892 became aphasic and paralyzed suddenly on the right side for both motion and sensation. He recovered his speech in about two months, and motion in the upper and lower limbs in about three months. Sensation, however, never returned in the right side. In 1899 there was spastic hemiplegia of the right side, moderate in severity, with a moderate degree of contracture and spastic rigidity of the right upper limb, and exaggeration of the right patellar reflex. The hemianesthesia was well defined by the middle line of the body, and appeared to be complete everywhere on the right side. Right homonymous lateral hemianopsia was associated with the hemianesthesia. The

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[2] Dercum and Spiller, American Journal of the Medical Sciences, March, 1902.

hemianesthesia was studied repeatedly, and while intense it presented the following peculiarities: It was found that upon several occasions the patient would respond when the trunk upon the hemianesthetic side was tested, or when the proximal parts of the limbs were tested, that is, the upper arm and shoulder or thigh and hip. It was noticed also that occasionally he would respond when the right side of the face below the eye and above the mouth was touched. At most of the examinations no responses were obtained in these situations. At different times also it was noted that the line defining the hemianesthetic from the side with normal sensation varied somewhat, at times retreating a little from, and at other times advancing toward, the sound side. In the distal portions of the limbs, such as the forearms and hands and legs and feet, no variations in the tests were ever observed. The hemianesthesia appeared to involve equally all the forms of cutaneous sensation. The patient died January 9, 1901.

The left basal ganglia were cut in microscopical serial sections. A cyst implicated the posterior portion of the lenticular nucleus, the outer part of the posterior portion of the posterior limb of the inner capsule, the area of the *carrefour sensitif*, and the optic radiations. The greater part of the posterior limb of the internal capsule was intact. The optic thalamus was not implicated at any part in the cyst. The cyst was limited in its outer side in its upper portion by the cortex of the insula. The posterior part of the optic thalamus in its superior portion contained few nerve fibers, because of the secondary degeneration from the lesion of the optic radiations, but at a little lower level more fibers were found entering the posterior part of the optic thalamus. The cyst had the same relative position in all the sections as far as the lower part of the temporal lobe. In sections from lower levels the posterior part of the posterior limb of the internal capsule was even less implicated than in those from higher levels.

This case seemed to be one of great importance. The hemianesthesia was such as has been observed after cerebral lesions, and persisted probably over eight years. It was much more intense than the hemiparesis, and the reason for this was found in the slight degeneration of the motor part of the posterior limb of the internal capsule. The escape of the optic thalamus in the primary lesion is noteworthy.

The conclusions drawn may be repeated: "This case seems to

show that organic hemianesthesia may be caused by a lesion in the *carrefour sensitif* and lenticular nucleus, without implication of the optic thalamus, except such as occurs from secondary degeneration. We emphasize the statement that in this case the inferior and external portion of the thalamus was intact. It seems to be the first case of the kind carefully studied in the literature. Whether or not the implication of the lenticular nucleus is necessary for the existence of organic hemianesthesia we can not determine by a study of our specimens. The integrity of almost the whole of the posterior limb of the internal capsule seems to indicate that the sensory fibers are located chiefly, if not entirely, in the area of the *carrefour sensitif*, or it may be that some sensory fibers pass through the lenticular nucleus. This view is in accord with the teaching of Edinger, inasmuch as he states that a portion of the sensory tract passes through the posterior third of the internal capsule and a portion through the lenticular nucleus. The lemniscus in its interolivary portion on the left side was one-fourth to one-fifth narrower than that on the right side, and from this we conclude that the lemniscus on the left side had undergone retrograde atrophy. Some of its fibers, therefore, were probably cut in the lesion of the *carrefour sensitif* and lenticular nucleus."

The atrophy of the left lemniscus in this case as well as in the second case reported in the present paper, is interesting. It seems now well established that no fibers of this tract pass to the cerebral cortex, but that all terminate in the optic thalamus. Inasmuch as none of these fibers could have been cut, if this view be correct, by the cyst in either of these two cases, the lesion of the thalamo-cortical sensory fibers must have caused retrograde atrophy in the lower system of sensory neurones in association with the thalamo-cortical sensory neurones.

The various theories relating to the function of the optic thalamus were referred to in this paper by Dercum and Spiller, and it is neither necessary nor desirable to repeat what was said there concerning those that time has shown must be discarded. The views of Dejerine,[2, 3] either as given by himself alone or in association with Long, are so important that mention should be made of them again. It is not possible, according to Dejerine, to

[2] Dejerine, Anatomie des Centres Nerveux, Tome deuxième, fascicule I, p. 257.

[3] Dejerine and Long, Comptes rendus de la Soc. de Biologie, 1898, p. 1174.

admit the existence in the posterior segment of the internal capsule of a region for sensory fibers only. The sensory fibers are intimately mingled in the internal capsule with the fibers of projection. Hemianesthesia of general sensation, of central origin, can exist only when a lesion in the optic thalamus destroys the terminal fibers of the median lemniscus and the thalamo-cortical fibers; or when the connections of the thalamus with the sensori-motor cortex are destroyed, even though the thalamus may be intact; and in the latter case the lesion is always very extensive.

Long,[4] in his thesis, says: The sensory tract passes through the tegmentum of the cerebral peduncle and enters the inferior and external part of the optic thalamus, from this the thalamo-cortical fibers pass by the internal capsule and corona radiata. Hemianesthesia occurs:

In the cases in which the optic thalamus being intact the connections with the sensori-motor cortex are more or less interrupted, in the latter condition the lesion is always very extensive. Hemianesthesia is especially likely to be persistent when the lesion is in the optic thalamus (pp. 105, 106).

A distinct sensory tract in the posterior segment of the inner capsule does not exist, the corticopetal fibers are mingled with the other vertical or transverse fibers, and especially with the fibers of the pyramidal tract, which occupies the knee and the posterior segment of the internal capsule as far as the retrolenticular region (p. 93):

Marie and Guillain[5] do not believe in the existence of a distinct sensory tract in the internal capsule. They say: "To the observations which we have mentioned above, and which prove that lesions of the sensory zone of the internal capsule may exist without anesthesia, we can add more than thirty cases in which we have seen degeneration of different parts of the lenticulo-optic segment without hemianesthesia.

"We believe that we have shown in this work that it is not possible to describe a region exclusively sensory in the inner capsule of man, and that hemianesthesia may not occur even with intense capsular and cortical lesions.

"One may observe destructive lesions of the so-called sensory zone of the internal capsule without persistent hemianesthesia.

[4] Long, Les Voies Centrales de la Sensibilité Générale, 1899.
[5] Marie and Guillain, Semaine Médicale, 1902.

We do not know whether the sensory fibers pass through the part of the inner capsule designated by Türck and Charcot, but we may assert that when this zone is damaged sensation may follow other tracts to reach the field of consciousness, consequently tracts confined wholly to the transmission of sensory impressions do not exist in the inner capsule."

It appears from this that Marie and Guillain do not exclude the existence of sensory fibers in the internal capsule; they seem to grant that the *carrefour sensitif* may contain sensory fibers, but they add: "We have been led to ask ourselves whether sensation may not employ many ways of transmission, and an affirmative reply seems to be proper for this question."

Roussy[6] referring to work done by Dejerine, chiefly in collaboration with Madame Dejerine or Long, states that the motor and sensory tracts, intermingled in great measure in their cortical distribution (sensori-motor zone), are intermingled in their subcortical and central regions (corona radiata and internal capsule). The motor tract passes directly from the internal capsule into the foot of the peduncle, while the ascending fibers of the sensory tract, coming from the tegmentum, are interrupted in the optic thalamus, which they enter in the ventral and posterior portion. It is at this level that a destructive lesion may cut the sensory fibers and merely graze the projection fibers of the motor path, and it is exactly at this region the lesion occurred in the three cases of the thalamic syndrome that he had been able to study in serial sections (p. 338).

Roussy adds that Dejerine and Long have shown in a communication concerning the localization of capsular hemianesthesia, that disturbance of general sensation results from central lesions of the hemispheres under two conditions:

1. In thalamic lesion destroying the terminal fibers of the sensory tract of the peduncle and the fibers of origin of the thalamo-cortical neurones.

2. When the thalamus is intact but the connections with the sensori-motor cortex are more or less destroyed. The lesion then is always very extensive.

When the lesion is situated in the external nucleus of the thalamus, implicates more or less the internal and median nuclei and the pulvinar, and only a part of the fibers of the posterior segment

[6] Roussy, La Couche Optique. G. Steinheil, Paris, 1907.

of the internal capsule, the clinical picture of the thalamic syndrome is seen.

Such a lesion cuts the centripetal ascending neurones, the central tracts of general sensation which have been interrupted in the thalamus, but he is not able to go further and to say exactly where these different tracts are situated, as he believes with Long, that the median fillet represents only an important part of the sensory paths (pp. 339, 340).

In a footnote Roussy adds: From the recent work of Grünbaum and Sherrington, and Campbell, it seems that the opinion regarding a sensori-motor cortex should be reconsidered, and the ascending frontal convolution be regarded as purely motor, and the ascending parietal as sensory. These most interesting observations, however, have not been confirmed by the study of focal cerebral lesions (338).

In Roussy's case Kaiser, Case 4, a lesion of the thalamus caused degeneration which he was able to trace by the Marchi method into the ascending frontal and ascending parietal convolutions. He states that he is the first to trace thalamo-cortical fibers in man by the method of Marchi from the optic thalamus to their termination in the cortex, in a case in which the lesion implicated the thalamus and respected the posterior segment of the internal capsule. Probst however has done this.

From the footnote referred to above, it is evident that Roussy is in some doubt as to the unqualified acceptance of a sensori-motor cortex, at least he indicates that further observation may exclude such acceptance, and that past work has not established the correctness of a sensori-motor cortex.

It is evident that while he accepts the teaching of Dejerine and Long, and believes the sensory and motor fibers are intermingled in the inner capsule (i. e., the thalamo-cortical neurones of the sensory tracts), he is not prepared to say definitely where these tracts leave the ventral and posterior part of the thalamus to enter the internal capsule. He distinctly states that all the different sensory thalamo-cortical tracts are not known, and that they are more than the continuation of the median fillet.

It is interesting to observe that in his summary of the parts which must be affected to cause the thalamic syndrome he includes a part of the posterior segment of the internal capsule ("et n'intéresse qu'une partie des fibres du segment postérieur de la

capsule interne"). An examination of the drawings accompanying his cases permits the conclusion that a lesion of the retro-lenticular portion of the posterior limb of the internal capsule was important in the production of the syndrome, although in Case 4 the retro-lenticular portion escaped.

V. Monakow[7] says that in recent years a number of cases occurring in early life have been published, in which notwithstanding complete interruption of the posterior limb of the internal capsule the anesthesia was not complete, or was only transitory (Dejerine, Marie and Guillain). According to these writers a hemianesthesia may occur from a lesion of the internal capsule, but all the thalamo-cortical fibers, mingled with the motor cortico-spinal tract and covering a large area, must be implicated. Hemiplegia is always associated with the hemianesthesia produced by such a lesion. Marie and Guillain go further, and not only with Dejerine deny the existence of a sharply defined sensory tract in the internal capsule (the *carrefour sensitif*), but from their clinical observations they conclude that destruction of the entire inner capsule, the Rolandic zone, the lenticular nucleus and the optic thalamus, may occur without necessarily causing hemianesthesia. V. Monakow, in reply to this statement, calls attention to the failure of Marie and Guillain to mention whether all forms of sensation, especially the stereognostic perception, were thoroughly studied.

He adds: "It is certain that in the majority of cases of lesion of the posterior part of the internal capsule, and even when the ventral thalamic region is also damaged in extensive degree, the sensations of pain and pressure, although usually in modified form, may be preserved. The same is true of the sensation of temperature, which usually is only partially affected. It is otherwise as regards the muscular sense, the senses of location, space, strength, and stereognosis.

"The muscular sense, when the entire retro-lenticular portion is destroyed, can scarcely ever be entirely intact. The same is true of location and space senses. These forms of sensation, as the majority of clinical cases observed to this time and experiments on animals without exception have demonstrated, are permanently greatly impaired by so-called cortical lesions, i. e., those confined to the Rolandic region. As regards the behavior of the

[7] v. Monakow, Gehirnpathologie, second edition, p. 611.

stereognostic sense, I have never missed a serious disturbance of this sense in the cases of lesion of the retro-lenticular inner capsule observed by me. If indeed the stereognostic sense in the cases of Dejerine and Long, and Marie and Guillain (notwithstanding the extensive capsular lesions) has been entirely intact, which is incomprehensible to me, this negative finding must be explained by the long duration of the lesion and by the assumption of the previously lost functions by the sound hemisphere (substitution)."

V. Bechterew[8] concludes from his own clinical observations, that extensive destruction of the anterior and medial portions of the thalamus may exist without hemianesthesia. Only lesions of the posterior thalamus are constantly associated with anesthesia of the contra-lateral side of the body. One must not conclude, he says, that the hemianesthesia which occurs with the so-called capsular lesion is dependent in all cases on a lesion of the thalamus. As the sensory tract from the thalamus to the cerebral cortex passes through the internal capsule, evidently a focal lesion of the upper part of the capsule may cause hemianesthesia or hemiplegia. Accordingly experimental and clinical observations are in evidence that the posterior outer part of the thalamus, or more correctly, the posterior part of its lateral nucleus, forms a station for the sensory tracts from the contralateral side of the body.

G. d'Abundo[9] regards the term thalamic syndrome as badly chosen, inasmuch as the posterior segment of the internal capsule was implicated in all the cases presenting this syndrome in which the thalamus was affected. He therefore does not accept the view that the optic thalamus is a station in the sensory tracts. In his experimental work he found slight and transitory impairment of general sensation as a result of lesion of the postero-external portion of the thalamus, and marked impairment of sensation occurred only when the internal capsule was implicated.

That a lesion in the upper and external part of the optic thalamus may not produce hemianesthesia is shown by the well-known case of Edinger,[10] reported some years ago. His patient did not have hemianesthesia. At first following the onset of the symptoms, he states she had a sensation in the right side different from

[8] v. Bechterew, Die Funktionen der Nervencentra, 1909. Vol. 2, p. 1112.
[9] G. d'Abundo, Abstract in Revue Neurologique, Dec. 15, 1910.
[10] Edinger, Deutsche Zeitschrift für Nervenheilkunde, Vol. I, p. 262.

that in the left. She had distinct hyperesthesia in the paralyzed limbs. Tactile impressions, unless they were very slight, were felt as pain. The lesion occupied the dorsal part of the external nucleus of the optic thalamus and a part of the pulvinar.

These words are found in Lewandowsky's[11] recent work: "The position of the sensory tracts is somewhat more complicated than Charcot assumed in his teaching of the *carrefour sensitif,* but the greater part of this tract is caudal to the motor tract, and without doubt the anatomical possibility is thereby given that at least the chief portion of the sensory fibers may be destroyed by a lesion without implication of the motor tracts. In fact Raymond, Dercum, Spiller, and v. Monakow have observed cases of pure hemianesthesia from lesions of the retro-lenticular portion of the internal capsule, v. Stauffenberg from a lesion in the medullary substance of the posterior central and supramarginal gyri, I also have seen pure hemianesthesia in an operated case, and from the position of the tumor, which was removed, the cause of this persisting anesthesia, even after the operation, was not to be found in a lesion of the thalamus, and not alone in a destruction of the cortex, but must be attributed to a lesion of a part of the inner capsule (Vol. 2, p. 795 et seq.).

The character of the sensory disturbances from thalamic lesions, Lewandowsky says, does not differ in its details from that from a lesion of the internal capsule or of the cerebral cortex (p. 792).

The usual result of lesions which destroy the corona radiata of one side, is not extensive restoration, but persisting disturbance even almost complete loss; and yet complete loss of sensation and especially of pain sensation, scarcely ever occurs even immediately after the apoplexy; according to Marie it never occurs (p. 793).

Inasmuch as sensation of the extremities may be more disturbed than that of the face, and vice versa, from thalamic lesions, the sensation of different regions of the body must be separately represented in the thalamic nuclei, but we do not know exactly what this localization is. We know nothing concerning the localization within the sensory part of the inner capsule. We can not tell from clinical signs whether a disturbance of sensation depends on a lesion of the thalamus, inner capsule or cortex. The predominance of sensory over motor disturbance or its isolated occur-

[11] Lewandowsky, Handbuch der Neurologie,

rence, indicates a lesion of the thalamus, the posterior part of the internal capsule, or the region posterior to the central fissure (pp. 797, 798).

It may be wise to quote Lewandowsky's definition of the ventral nucleus: Most authors, he says, who recognize sharp limitations in the optic thalamus describe a dorsal and a ventral part of the lateral nucleus. The ventral part embraces, according to v. Monakow, the entire basal half of the lateral part of the thalamus (Vol. I, Part I, p. 251).

The studies of Probst[12] on the central sensory tract are among the most important in literature. He says:

"I was able to demonstrate by a series of operations cutting tracts and by the Marchi method, that all fillet fibers enter the thalamus, and that not a single fiber goes directly to the cerebrum.

"After destruction of the latero-ventral thalamus nucleus I could demonstrate a series of sensory disturbances, and as following these lesions the thalamo-cortical fibers to the sensory region degenerated, the conclusion is justifiable that this was the central sensory tract. The central sensory tract makes exit in part through the external medullated lamina of the thalamus, into the ventral part of the inner capsule, and passes upward close to the lenticular nucleus; in part through the dorsal part of the third segment of the lenticular nucleus, into the corona radiata, in which it forms chiefly the lateral arciform fibers (Bogenanteil), and divides in the gyrus sigmoideus anterior et posterior, or gyrus centralis anterior et posterior.

"From my findings the anterior central convolution must be regarded chiefly as motor, the posterior central convolution as sensory."

In regard to the mingling of motor and sensory fibers in the internal capsule, he says: "Exner, Flechsig, Henschen, Dejerine and Long, and Munk have advanced the view that the cortical areas in which motor impulses arise, serve also for perception and extension of the sensory impressions, accordingly motor and sensory tracts would intermingle in the corona radiata.

"In opposition to this view I might refer to my representations of the course of the pyramidal tract through the corona radiata, as made by me from the Marchi staining in amyotrophic lateral

[12] Probst, Sitzungsberichte der kaiserlichen Akademie der Wissenschaften, Vol. CXV, Part III, 1906.

sclerosis. If one compares the course of the pyramidal tract in the corona radiata given there with the course of the above described central sensory tract, he will find that both tracts in many particulars correspond in the ventral portion of the inner capsule and also in the corona radiata, but in general it may be said that the central sensory tract is more caudal."

Reviewing these statements of different authors it becomes evident at once that much difference of opinion exists regarding the positions of the sensory and motor tracts in the internal capsule and corona radiata. There is evidence that the sensory fibers may not be mingled with the motor. Lewandowsky holds, as has been stated, that the bulk of the sensory fibers is behind the motor tract, and this view is taught also by Probst. Some work done by Probst, by which it was shown that the muscular and position senses may be altered by a cerebellar lesion, seems to indicate that we by no means know fully the central pathways of sensation. He says: "I and others have demonstrated after destruction of the cerebellum, disturbance of the muscular sense and of the sense of position, from which the conclusion may be drawn that a part of the sensory conduction is through the cerebellum (l. c., p. 158).

The weight of opinion is in favor of the termination of sensory fibers in the ventral portion of the lateral nucleus, but it is due to Probst especially that we have an anatomical knowledge concerning the thalamo-cortical sensory tract. He has shown that this bundle is distinct from the motor, although probably it is not confined to the area of the *carrefour sensitif;* rather it occupies the outer part of the inner capsule close to the lenticular nucleus, but he states quite positively that in relation to motor fibers "die zentrale Fühlbahn kaudaler gelegen ist." In the interpretation of the case of Dercum and Spiller the possible importance of the lenticular nucleus to the sensory tract was recognized, as shown by these words: "It may be that some sensory fibers pass through the lenticular nucleus."

Most investigators, since the publication of the paper by Grünbaum and Sherrington, regard the precentral convolution as chiefly if not entirely motor, and the postcentral convolution as chiefly if not entirely sensory. From à priori reasoning it would seem improbable that the motor and sensory fibers should be mingled intimately in the internal capsule and corona radiata, if their cortical representation is in so large measure distinct.

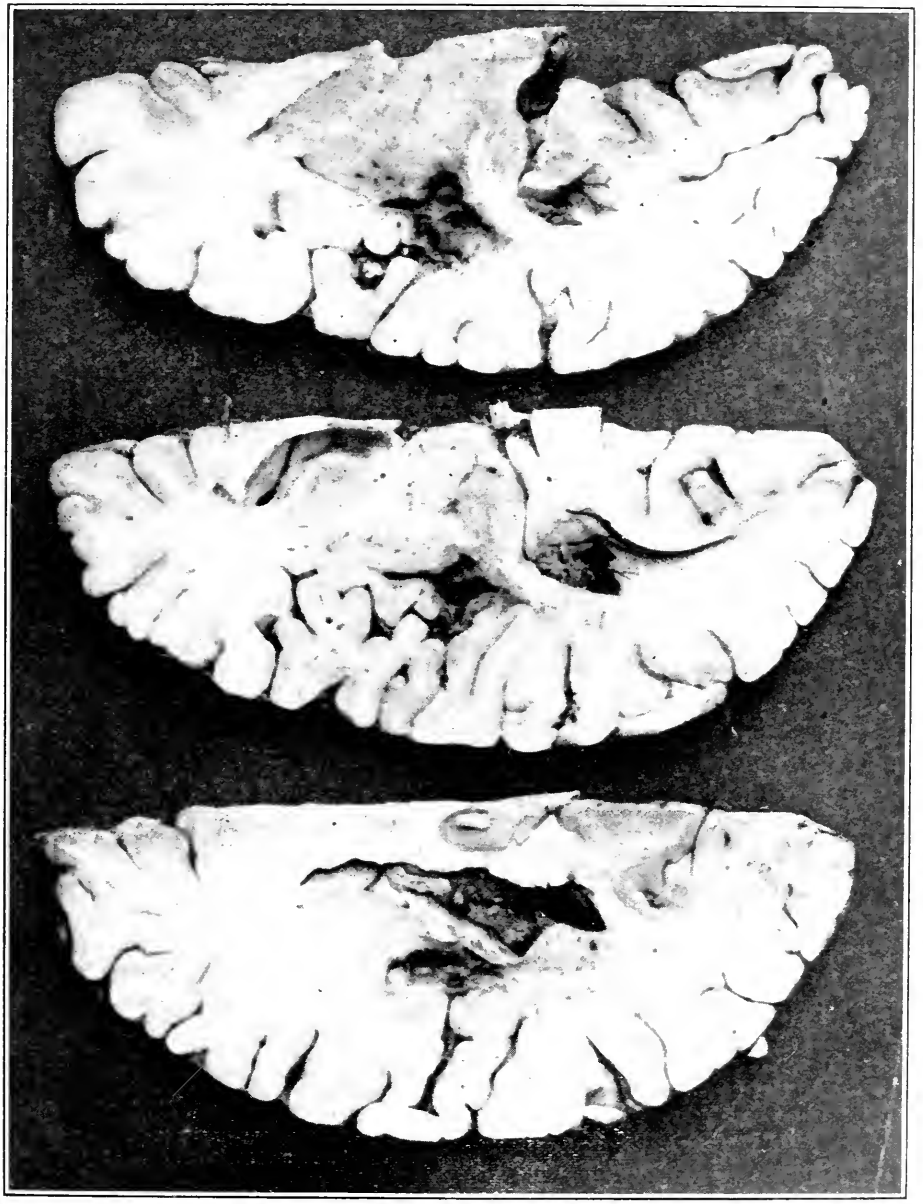


FIG. 1. Photographs of three levels of the left basal ganglia. The lesion destroyed the carrefour sensitif and the posterior part of the lenticular nucleus.

The evidence seems to be clear that a lesion of the ventral portion of the lateral nucleus of the optic thalamus may cause hemianesthesia, but we endeavor in this paper to again demonstrate, what was attempted in the paper by Dercum and Spiller, viz., that a lesion implicating the posterior part of the internal capsule and the posterior part of the lenticular nucleus also may cause hemianesthesia, and that in these two cases the hemianesthesia can not be attributed to a thalamic lesion. It is true that in the present case a very small lesion was found only in the dorsal part, that is in the upper part, of the optic thalamus, but it did not extend to or near to the ventral nucleus, and was situated similarly to the lesion in Edinger's case, which produced no impairment of sensation.

If the objection be made that hemiparesis existed in our cases, and therefore sensory and motor fibers were mingled, our reply would be that hemianesthesia occurs when the posterior part of the internal capsule and the posterior part of the lenticular nucleus are degenerated, and that many cases of hemiplegia without hemianesthesia are known in which the lesion was in the middle or anterior part of these structures.

The case we describe is as follows: The patient was a man who died in the service of Dr. Charles K. Mills immediately before one of us (Dr. Spiller) went on duty, but Dr. Mills has kindly given us the pathological material for study. The man was admitted to the Philadelphia General Hospital October 10, 1900, and died January 1, 1907. A brief reference to this case had been made in a paper by Dr. Weisenburg[13] and we quote his notes:

"W. K, white, married, aged 66 years, cement worker, denied syphilis, but was a moderate drinker, and had been healthy until fifteen weeks previously, when, while working in the street on a hot day, he fell and was unconscious for about twenty hours. On recovery he had a complete right-sided hemiplegia. His speech was not affected.

"He was admitted to the Philadelphia Hospital five weeks after the stroke. When admitted he had regained partial use of the right arm and leg, the leg having improved more than the arm. The arm shows moderate contracture.

"The patient was examined on admission by Drs. Mills and Spiller. The examination showed absence of all forms of sensation over the right arm to a point corresponding to the insertion of the deltoid muscle. From here to the shoulder, sensation was

[13] Weisenburg, JOURNAL OF NERVOUS AND MENTAL DISEASE, 1901, p. 285.

impaired, and still higher it became less marked. At this examination the anesthesia in the lower extremity was also more marked distally. All forms of sensation were absent to an irregular line just below the knee, impaired from this point to the hip, while on

FIG. 2. Photograph of microscopical section taken from the middle block of Fig. 1. (Photograph by Dr. A. J. Smith.)

the abdomen and chest they were but slightly diminished. The anesthesia in this case was not limited to the median line either on chest or face. In the latter it reached to the side of the nose and a part of the cheek on the other side. Sensation was dulled on

the right side of the tongue and absent on the palpebral conjunctiva. Muscular and pressure senses were absent, and stereognosis was present. [It is not stated whether stereognosis was impaired or not, presumably it was.]

"Subsequent examinations have never given the exact results above noted. The most frequent results obtained in the later examinations have been entire absence of tactile and temperature sensations for the whole right side; pain sensation, however, being retained in some areas of the shoulder, chest, abdomen and thigh."

This patient was repeatedly in the service of one of us during the years he remained at the hospital, as well as in the service of other members of the staff. Such data as relate especially to the motor and sensory palsies are taken from the later notes, but they are less reliable than those obtained in the examination by Drs. Mills and Spiller.

Nov. 9, 1900. He has total tactile anesthesia on the right side. Pain and thermal sensations are impaired, and muscular sense is lost on the right side.

Dr. de Schweinitz, at this time, recorded the presence of incipient cataract in the right eye. He obtained a hazy view of the left retina. Hemianopsia was not present.

Nov. 14, 1901. There is partial loss of power in the right arm and leg, but the man walks about at will.

Jan. 6, 1903. Grip is fairly good on each side, is slightly diminished on the right side. Slight contracture is present in the right upper limb. Power in the right lower limb is diminished. Babinski's reflex gives upward movement of the toes on the right side, but there is no ankle clonus.

Anesthesia is present over the right side of the head, scalp and face, extending 2 to 3 cm. to the left of the median line. On the chest and abdomen the anesthesia extends irregularly 1 to 2 cm. beyond the median line. The right upper and lower limbs are anesthetic, at times there seems to be present an after-sensation.

Dr. Shumway reported Oct. 21, 1903, O. D. vision 5/20; O. S. vision at one meter. O. D. media clear, disk rather pale but not pathologically so, vessels are irregular in caliber particularly the veins (arteriosclerosis), otherwise the fundus is normal. O. S. shows opacity in the capsule of the lens. Homatropine dilatation shows eyegrounds to be that of high myopia with extensive choroiditis in macular region.

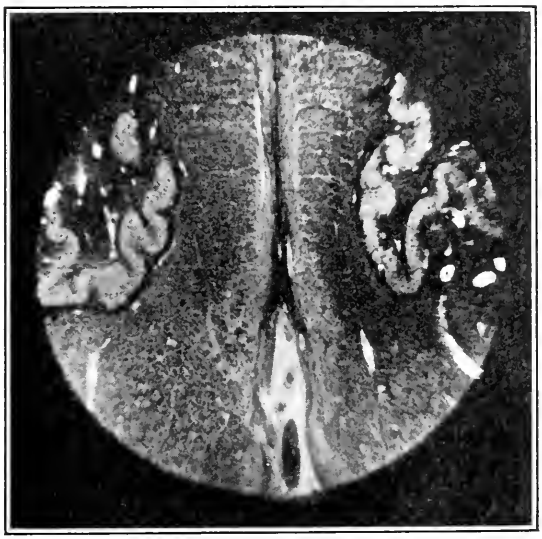
April 25, 1905. There is hemianesthesia involving skin and mucous membranes, slightly overlapping the sound side. Later some contraction of the visual fields for red and white was noticed.

Pneumonia developed on Dec. 31, 1906, and death occurred Jan. 1, 1907.

One might wish that certain details regarding sensation had been made more complete, but the uncertainty of obtaining a necropsy in any case in this country interferes greatly with exhaustive clinical study. The facts given are sufficient to show

that a grave disturbance of sensation persisted during a period of about six years, but it is extremely probable that in some instances the term "anesthesia" was used when it should have been "hypesthesia."

The brain was cut in horizontal microscopical serial sections. The region of the left basal ganglia was sectioned at three levels. A cyst was found in the outer and posterior part of the lenticular nucleus and island of Reil, implicating about the posterior third of the lenticular nucleus. The posterior third of the posterior



R. L.

FIG. 3. Photograph of section through the medulla oblongata. The lemniscus on the left side is much smaller than that on the right side. (Photograph by Dr. A. J. Smith.)

limb of the internal capsule was degenerated. A small area of degeneration was found in the portion of the optic thalamus adjacent to this degeneration in the internal capsule, but it was only in sections from the higher levels, was very small, and could have had no connection with the disturbed sensation. The retrolenticular region of the internal capsule was normal, and normally stained fibers passed from it into the pulvinar of the optic thalamus. This condition explains the absence of hemianopsia. The anterior limb of the internal capsule, the knee, and anterior two-thirds of the posterior limb, stained normally. In sections from lower levels the degenerated area withdrew from the region of the optic thalamus toward the island of Reil. The ventral nucleus of the optic thalamus was in no wise implicated.

The left anterior pyramid was considerably degenerated. The left median lemniscus was about one fourth smaller than the right.

A TUMOR OF THE CORPORA QUADRIGEMINA[1]

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Tumors involving and practically limited to the region of the corpora quadrigemina are not frequent and I report this case because it may have some bearing upon the physiology and clinical importance of this part of the brain stem.

There is especially a dearth of literature of accurately observed cases, clinically and pathologically, on the relation between lesions of the corpora quadrigemina and the functions of hearing and sight; therefore this case deserves careful consideration and analysis.

Case 1.—Patient E. C. H., aged seventeen, school-girl; parents absolutely well. With the exception of the diseases of childhood, she had always been robust. About one year ago patient began having headaches. Two months later she began to have pain in the eye-balls, and about the same time she began to see double. The pain was chiefly located in the frontal region and on the right side. When walking she would often stagger to the right side. The right arm and leg, although not weak, did not seem right. In September she began to lose vision, and in December became totally blind. The patient often had hiccoughs, and vomited almost daily, especially when the headaches were violent. She at times had sudden attacks of rigidity of all her muscles, fell to the ground but did not lose consciousness.

Report of Dr. S. C. Ayres

June 17, 1908. For three or four months has had headaches every day, coming on in the morning and lasting until noon. Her general health has been good, she is abnormally fat but is as active as girls of her age.

Both optic discs are very much swollen, there is marked congestion and tortuosity of the veins. There is a small hemorrhage above the right disc. V. = 1 in both eyes. Pupils moderately dilated and very slightly responsive to light.

[1] Read at the thirty-seventh annual meeting of the American Neurological Association, May 11, 12 and 13, 1911.

July 6. R. e. V. = 1, L. e. V. = 15/20, discs more swollen, diplopia, paresis of left ext. rectus.

July 15. L. e. V. = 15/30; up to this time the vision of the right eye was normal.

July 30. R. e. V. = 15/20. L. e. V. = 15/30.

Aug. 10. R. e. V. = 15/30, L. e. V. = 15/40.

Sept. 17. Conditions much worse, V. = motions of hands only.

Dec. 10. V. = perception of light.

Feb. 1, 1909. Fell to the floor, but was not unconscious, two weeks later had a similar attack, her extremities were cold, had to keep her feet warm in cold weather by hot water bottles.

April 19, '09. Optic discs blanched, numbness of right side of body and pain in right side of head.

Examination by Dr. Hoppe.—April 19, 1909. Patient's mental condition was good. Pupils were dilated. There was no pupillary response to light; atrophy of both optic nerves, with choked discs; paralysis of both external recti. The external muscles of the left eye were all paralyzed except those which move the eyeball downward. She was unable to raise the right eye upward or turn it outward, but it could be turned inward and downward. There was slight ptosis of both eyelids; no anesthesia of either cornea. There was static ataxia, and when patient walked she showed a tendency to fall to either side, but mostly to the right. There was some weakness (?) of the left leg; patellar reflexes were normal. There was no defect of hearing. Tests being made with tuning fork, etc.

Diagnosis.—Subtentorial growth of uncertain location.

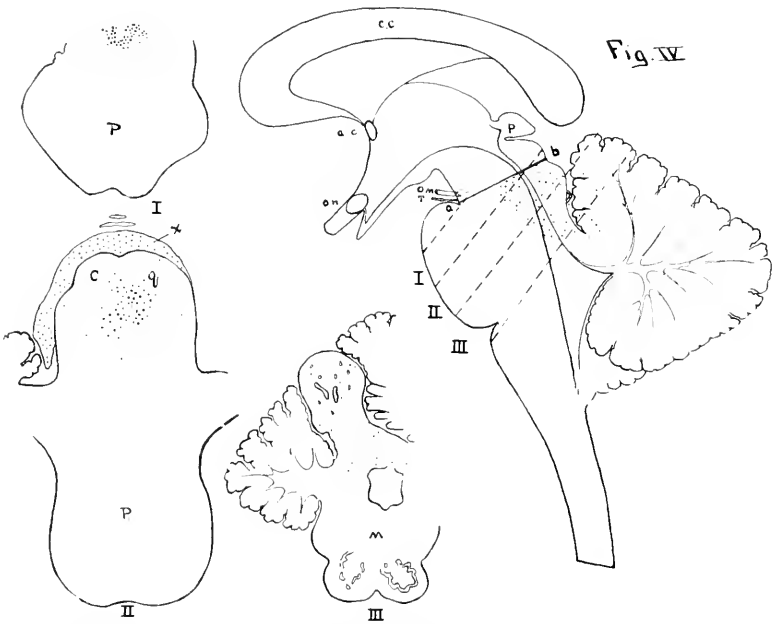
Course of Disease.—An operation was asked for by the father and daughter, but was deferred because of the hope of giving relief by the use of drugs. Relief was obtained by the use of acetylsalicylic acid (aspirin) and codein sulphate. The patient quickly lost her ability to walk at all, on account of extreme ataxia, showing a tendency to retropulsion and falling backward. Patient retained normal hearing to the very end. Somnolence increased. Incontinence of urine and feces set in. The headache and vomiting suddenly disappeared, and for two months before her death did not return. On August 12 patient died, a few hours after an attack of coma.

Autopsy.—Limited to the cranial cavity. There was very little cerebrospinal fluid. The cortex was anemic and the convolutions were flattened. Both lateral ventricles were dilated, and the right one was filled with a large blood-clot, which had caused the exitus. The floor of the right lateral ventricle over the basal ganglia was covered by a soft tumorous mass, very extensive, but not very thick, and hardly infiltrating the thalamus. The main mass occupied the region of the corpora quadrigemina, completely obliterating the canal of Sylvius, and extending backward into the

substance of the pons and laterally affecting the margin of the left lobe of the cerebellum. The rest of the cerebellum, both lateral and middle lobes, were uninvolved. The tumor was not more than an inch in diameter.

Report of Dr. Lambert

The brain stem and cerebellum posterior to cut *a–b*, Fig. 4, were received in formalin; several slices had been previously taken from different regions of the tumor and transverse-oblique cuts had been made through the brain stem and cerebellum, Figs.



Diagrammatic sketch showing in Fig. 4, a sagittal section through the normal brain stem. *cc*, corpus callosum; *p*, pineal gland; *on*, optic nerve; *om* and *t*, the oculo motor and trochlear nerves; *a—b*, the line of original section; I, II, III, the slices removed for sectioning, the dotted area, the approximate extent of the tumor.

Section I, from the anterior slice (Fig. 4) shows the pons, *p*; the dotted area the extent of tumor involvement.

Section II from the middle slice (Fig. 4); *p*, pons; dotted area represents the tumor.

Section III from the middle slice (Fig. 4); *p*, pons; dotted area represents the tumor; *cq*, the site of the corpora quadrigemina; *x*, the tumor growth beyond the boundaries.

4, 1, 2, 3. From these levels large slices were taken for alcohol-paraffin imbedding. Sections from near the middle of each of these blocks are represented in sketches 1, 2 and 3.

In section i, which is incomplete, compare with level from which it was taken, Fig. 4, the pons portion containing the projection, pyramidal fibers, and the mesial fillet is intact except for compression. The tissue surrounding what seems to be the Sylvian aqueduct (?), no ependyma being demonstrable, is extremely cellular; this diffusely infiltrating growth is gliomatous and gradually fades into normal tissue as one passes away from the supposed aqueduct. The nuclei of the tumor cells are round and oval, often polymorphous, are rather scantily clothed with cytoplasm, and lie in a moderately rich fibrillar matrix which stains differentially by Mallory's neuroglia stain. Numerous gliomatous giant cells are also present, Photo B. The nuclei and roots of the fourth pair of nerves are involved; to what extent, if any, the third nuclei are invaded cannot be determined, the anterior portion of the tumor not being available.

In section ii, Fig. 4, the posterior (?) corpora quadrigemina are cut through; a gap in the stained section is the site from which a slice had been previously taken. The posterior corpora quadrigemina are completely involved in the gliomatous new growth. An occasional diffusely staining nerve cell is seen. The tumor has penetrated the pia and overgrown the corpora quadrigemina particularly on the left side, and has grown backward along the superior cerebellar artery, and has invaded the cerebellum as seen in section iii. A "pseudoglandular" pattern uniformly present in glioma where growth is unrestricted is well seen in that portion of the tumor immediately overlying the corpora quadrigemina, Photo A. In the walls of many of the smaller arteries and precapillaries in the tumor and the nervous tissue immediately bordering it are seen numerous colloid-calcareous granules, Photo C; calco-spherites are also not uncommon.

The mesial fillet and projection, pyramidal, fibers are uninvaded by the new growth at this level. The corpora quadrigemina are almost completely infiltrated with the glioma cells and only few nerve cells remain; the termination of the lateral fillet, the spinal-tectal and thalamic tract, the superior arms and posterior longitudinal fasciculus are also in a position to be considerably interfered with, if not destroyed, by the tumor growth at this level.

In section iii, the tumor has extended backward and upward into the left cerebellar hemisphere. Here the tumor is rather more vascular, the larger centrally located vessels belong, no doubt, to the superior cerebellar artery (compare with the vessels of the opposite side). The tumor is richly cellular, mitoses are not uncommon and atypical forms are occasionally seen, Photo D. Here fibril production is patchy, the tumor cells near the vessels have a palisade arrangement and here fibril production is richest; in the intermediate vascular zones fibril production is scanty.

Summary.—A richly cellular, infiltrating glioma, approximately 2 by 4 cm. in its diameters, relatively scant in fibril production and containing numerous giant cells, involves the corpora quadrigemina almost symmetrically and the floor of the Sylvian aqueduct. The extent of the tumor anterior to the level of the nuclei of the fourth pair of nerves is not known. Its posterior extent is most marked on the left side where it has grown backward into the left cerebellar hemisphere laterally along the superior cerebellar artery, and to a slight extent invaded the left pons-cerebellar arm. The anatomical structures in a position to be injured by the tumor growth would be: The nuclei and roots of the fourth pair of nerves (injury to third probable but not ascertainable), the posterior corpora quadrigemina (anterior probable) (owing to a previous pathological examination for the purpose of determining the nature of the growth, a section was removed which involved that portion of the growth which destroyed the posterior corpora quadrigemina) the termination of the lateral fillet, the superior cerebellar arm, and to a slight extent the left middle cerebellar arm, the spinal-tectal and thalamic tracts, and the posterior longitudinal fasciculus; the other structures, as the fillet and pyramidal fiber system, and especially the sixth pair of nerves, would be subject to indirect compression and injury.

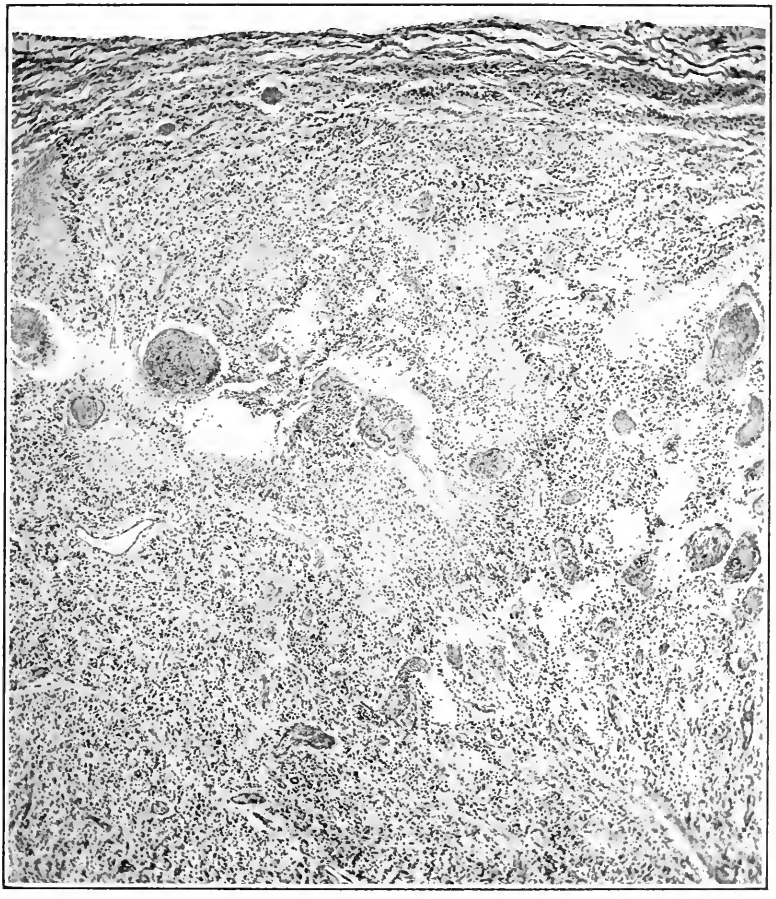
The involvement of the pons and cerebellum was so limited as we have seen by the very careful pathological examination that many, if not all the clinical manifestations in this case were caused by the destruction of the corpora quadrigemina and adjacent tissues. (See diagrammatic sketch.)

Let us summarize the chief symptoms and signs.

Double vision, staggering gait, falling to the right, gradual loss of vision, ending in three to four months in total blindness, sudden attack of rigidity in all muscles, falling to ground, without loss of consciousness, equal pupils, atrophy of optic nerves, no light response in pupils, all movement lost in left eye except downward movement, all movement lost in right eye, except inward and downward, slight ptosis of both lids, normal hearing, extreme static atazia with retropulsion, so that patient was finally unable to walk at all, motion and sensation and reflexes not affected. There were at no time forced position or forced movements.

SUMMARY OF DR. LAMBERT'S REPORT

"The anatomical structures in a position to be injured by the tumor growth would be the nuclei and roots of the fourth pair of nerves (injury to the third probable but not ascertainable): the



Photograph A. Shows a low magnification of a portion of the tumor. Near Section II, the irregular columns of nuclei fringed with a fibrillar protoplasm produce a pseudo-glandular pattern. The bloodvessels are thin walled and much engorged.

posterior corpora quadrigemina (anterior probable): the termination of the lateral fillet, the superior cerebellar arms, and to a slight extent the left middle cerebellar arm, the spinal-tectal and

thalamic tracts and the posterior longitudinal fasiculus. The other structures as the fillet and pyramidal fiber system and especially the sixth pair of nerves, would be subject to indirect compression and injury."

We have therefore definite clinical signs and an accurate account of what anatomical structures were destroyed by the growth. Moreover the growth was practically limited to the region of the corpora quadrigemina and the structures immediately subjacent and therefore the case is valuable in throwing some light, not only from the standpoint of the physiology of these parts, but also from a point of localization. Owing to a mutilation of the specimen in its anterior region, the case does not offer any light upon the point of the localization of the nuclei of the various external eye muscles which are innervated by the third nerve and we can dismiss this point at once.

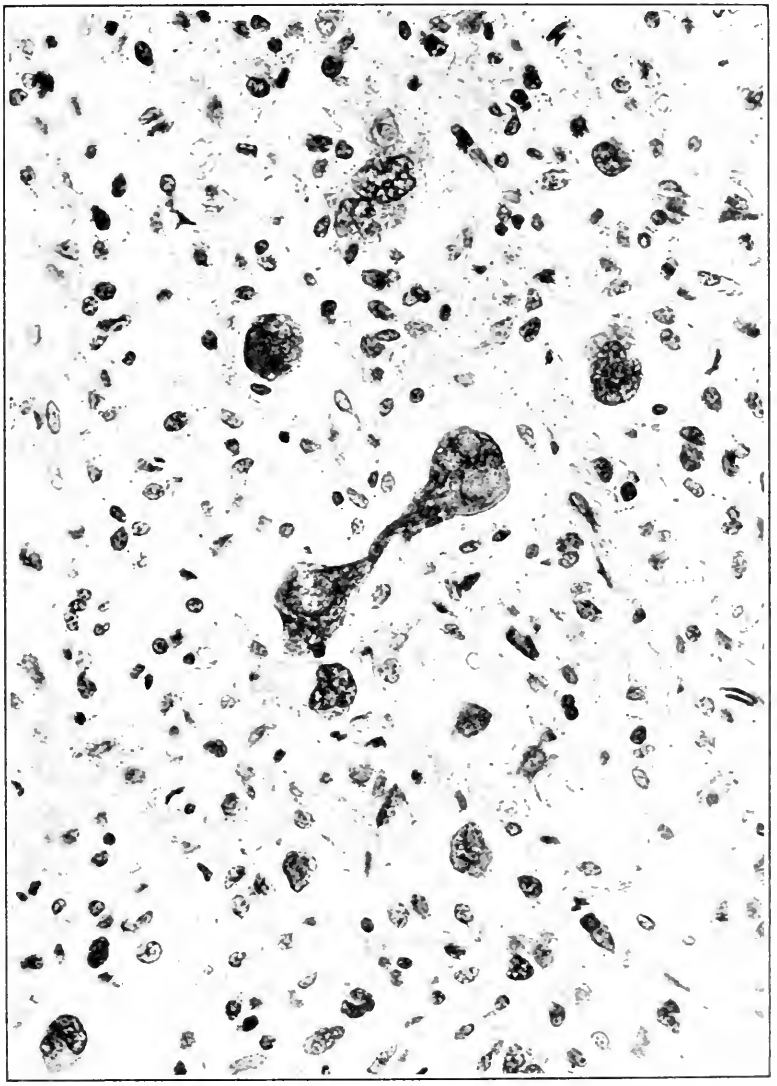
The only paralysis of external muscles of the eyes, not explainable by nuclear destruction, is the bilateral paralysis of the abducens. The loss of movement upward and inward can be explained by a destruction of the nucleii of the third and fourth nerves. The only explanation of the loss of function of the external recti lies in compression or destruction of the posterior longitudinal bundle, or it was caused by pressure of the nerve at the base, resulting from intra-cranial pressure.

Ransom (*Lancet*, May 4, 1895) reports a similar case with paralysis of the external recti, where the lesion was distal to the nuclei of the sixth. Cushing's explanation of constriction of the nerve trunks, caused by pressure of the artery, all due to increased intra-cranial pressure may offer an explanation.

As to the relation between the corpora quadrigemina and the function of sight, we cannot draw any positive conclusions either.

Ludwig Bach, who worked up the literature of 1890, concludes from a critical study of all cases, that isolated destruction of the corpora quadrigemina in man does not cause blindness. Whether or not any disturbance of vision occurs at all, he says, cannot be determined definitely, although the answer seems to be in the negative.

W. Nissen, analyzing eight cases of tubercles in this region, concludes that destruction of the corpora quadrigemina does not produce blindness, no gross disturbance of vision having been noted in any of these cases.



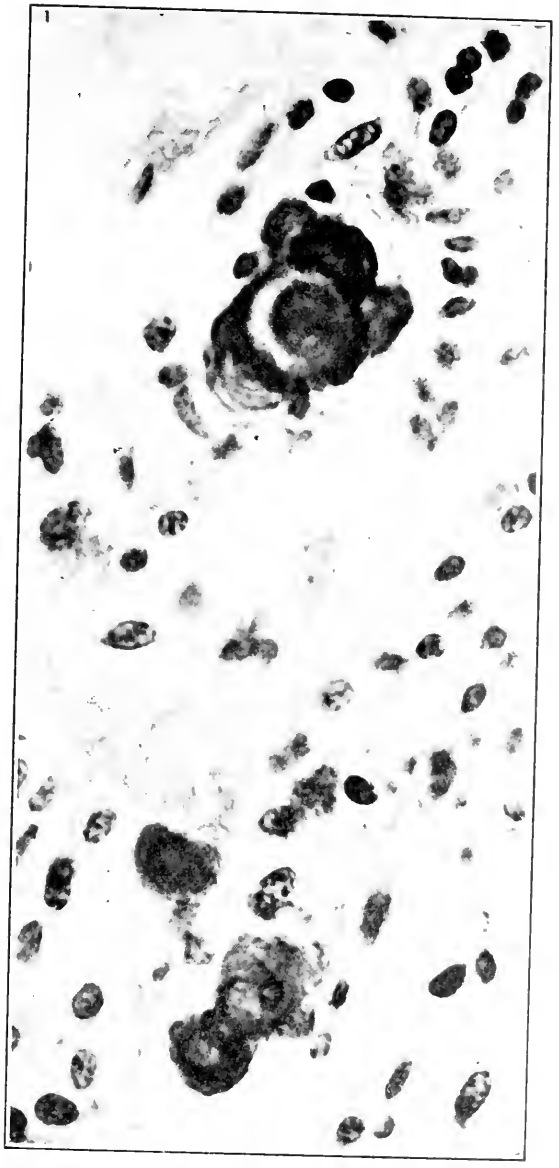
Photograph B. A higher magnification showing various types of nuclei and cells. The small round or oval type preponderates; numerous large multinuclear giant cells, some clothed with a moderate amount of cytoplasm are seen; the large dumb-bell shaped giant cell in the center is striking.

It is true that our patient was blind, and that blindness set in unusually rapidly, but we know that papilledema of an unusual degree was present before the deterioration of vision, and that later on atrophy of the optic nerves was present. We can conclude therefore that blindness was caused by a degeneration of the optic nerves and this is probably true in many other cases, and not by a destruction of the corpora quadrigemina. Moreover it is my opinion that the tumor began in the corpora quadrigemina and must have destroyed at least to a great extent these structures before it attained a size large enough to produce such a degree of intra-cranial pressure as to cause a very violent papilledema and that therefore disturbance of vision, if caused by a destruction of the corpora quadrigemina, should have preceded the development of the papilledema, whereas we know from Dr. Ayres's examination that vision was normal when the papilledema was at its height. It is very logical, therefore, to assume in this case that a destruction of the corpora quadrigemina did not cause blindness, but that blindness was accidental, being caused by an atrophy of the optic nerve following papilledema. When the external geniculate bodies, however, are involved in the destructive process we may have either hemianopsia or total blindness.

The centers for the iris are supposed to lie in advance of the nucleus of the third nerve and therefore unless the tumor is in advance of the corpora quadrigemina the light reaction will not be affected (Spiller, Kolisch, Bristowe, Sachs).

In our case, Dr. Ayres found that the pupils responded to light, although when I examined them light reaction was lost, but this was undoubtedly caused by the atrophy of the optic nerves. Bach, however, concludes that bilateral destruction of the corpora quadrigemina causes bilateral loss of pupillary light reflex. Unilateral destruction causes loss of light reflex of the pupil of the same side.

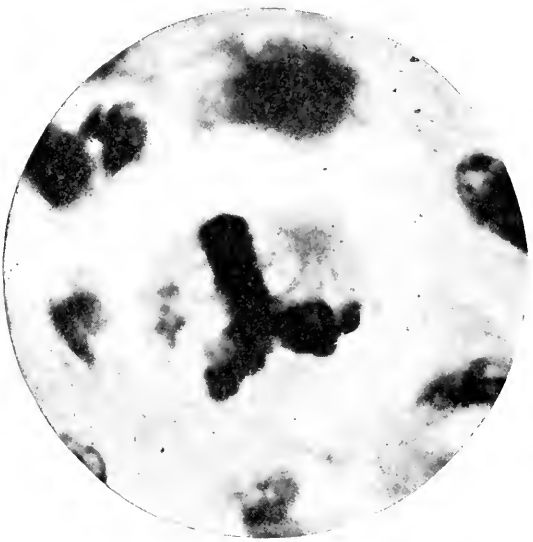
We will next take up the subject of the relation between hearing and the posterior corpora quadrigemina. We have seen from the clinical examination of our case the hearing was unimpaired, even up to the very last. A careful examination, both for air and bone conduction was made, but no defect of hearing was found. The pathological report states that the posterior corpora quadrigemina were completely destroyed, and that the



Photograph C. Colloid calcareous material: calco-spherites.

termination of the lateral fillet was in position to be injured. Clinical and pathological reports on this point are contradictory.

The experiments of Kallisher on trained dogs would indicate not only that the dogs can hear, but that they can differentiate between tones, even though the posterior quadrigemina are destroyed. These experiments were repeated and the conclusions affirmed by Rothmann, viz., that the posterior corpora quadrigemina can be destroyed without causing central deafness. Rothmann, however, found that there is some relation between the



Photograph D. An atypical mitotic figure three equatorial plates, spindles and centrosomes.

posterior corpora quadrigemina and the sense of hearing, but that its importance is secondary to the internal geniculate body, and that when the posterior corpora quadrigemina are destroyed, its function is capable of compensation. Bach (*Zeitschrift für Augenheilkunde*, Vol. VIII, p. 213) states as a result of a clinical and pathological analysis, that central deafness seems to result from a destruction of the posterior corpora quadrigemina, and that the destruction of one is followed by deafness of the opposite side.

Weinland (I quote Allen Starr) made a collection of 27 cases of lesions of the posterior *corpora quadrigemina*. In 13 cases deafness was noted, but in all these cases the lateral lemniscus was

affected. In some cases there was bilateral deafness, in others the deafness was on the side opposite the lesion. Weinland, upon the evidence of his own case as well as that of Ruel and Ferrier, comes to the conclusions that unilateral destruction of one posterior corpora quadrigemina and the lateral lemniscus leads to deafness of the opposite ear. In the other 14 cases the lesion did not reach the lateral lemniscus or there was no mention made of disturbance of hearing.

Oppenheim quotes Seibman who holds that disturbances of hearing result from lesions either of the lateral lemniscus or the posterior corpora quadrigemina.

The accepted course of auditory impulses (Held, Thomas, Van Gehuchten) is to the acustic centers in the pons, thence along the lateral fillet, posterior corpora quadrigemina to the internal geniculate body and thence to the cortex of the temporal lobe. In our case this tract was interrupted by a destructive lesion, destroying the corpora quadrigemina and the ending of the lateral fillet, and still hearing was intact. There are not many of cases of this kind on record. In none of W. Nissen's eight cases was hearing involved at all.

In commenting on these cases Nissen[2] expresses the view "that the corpora quadrigemina may be a reflex area in which the acoustic system is connected with the nuclei for ocular movements."

In Collins case hearing was normal. Similar cases have been put on record by Gordinier and Bielschowsky but in these cases, while the posterior corpora quadrigemina were destroyed the lateral fillet was not affected. Our case differs from these in so far as both posterior corpora quadrigemina were destroyed and the "lateral fillet in position to be injured."

Our case is a clinical confirmation of the animal experiments of Kallischer and Rothmann, that destruction of the corpora quadrigemina does not lead to deafness. In just how far the lateral fillet was destroyed, the pathological report does not say. It merely says that the termination of the lateral fillets at the level of the section made through the region of the posterior corpora quadrigemina are in a position to be considerably interfered with, if not destroyed by the tumor growth in this level. They may

[2] I quote Spiller, whose articles in "The Eye and Nervous System" I have used freely in the preparation of this paper.

have not been totally destroyed, as the corpora quadrigemina were and this may be a reason for the retention of the faculty of hearing.

Less interesting but equally important from a diagnostic point in our case is the presence of intense ataxia and retropulsion. The development of the ataxia is interesting from a standpoint of differential diagnosis. The ataxia was practically the last of the symptoms to develop in a chronological order. While there was some uncertainty of gait and a tendency to stagger to the right side, this was slight, and hardly noticeable even after blindness had set in. Ataxia became marked toward the end, after the general signs of cerebral tumor, external eye-muscle palsies and blindness had been in existence for months or even a year. This would seem to indicate as we have argued before, that the growth began in the corpora quadrigemina and extended downward. It would also be a proof that destruction of the corpora quadrigemina as such has no effect on coördination of movements, but that only when the lesion had advanced and penetrated the deeper structures and destroyed the superior cerebellar arms and the red nucleus that we have marked symptoms of ataxia. In this way alone can we explain the ataxia in this case which was so marked as to render locomotion impossible. The degree of ataxia was probably due to the complete destruction of the superior cerebellar arms in our case and not to the very slight involvement of the left cerebellum. In other words, destruction of the corpora quadrigemina themselves does not cause ataxia, but the latter is due to the destruction of the superior cerebellar arms which decussate under them and form the red nucleus. Nothnagel believed that the corpora quadrigemina are concerned in coördination, whereas Nissen has put a case of tumor of the corpora quadrigemina on record in which the growth was strictly confined to these bodies and no ataxia at all was found.

The chronological order of development of the ataxia is very important, as we see from this case. The combination of ataxia and ophthalmoplegia is very often seen in subtentorial growths. We cannot hold with Nothnagel that this is pathognomonic of tumors of the corpora quadrigemina. But with Spiller and Bruns, this case teaches us that if the general signs and symptoms of brain tumor are followed by ophthalmoplegia and the latter by ataxia, the growth is liable to originate in the corpora quad-

rigemina, but that if the ataxia precedes the development of the ophthalmoplegia the tumor originates in the cerebellum.

Just how to account for the tendency to stagger backward or to fall backward on attempting to walk, is perplexing. This symptom, however, was noticed by Turner (*Brain*, Vol. 21, 1898) also in one of his cases.

We can conclude from the critical analysis of this case that neither blindness nor deafness nor ataxia are pathognomonic of a disturbed function of the corpora quadrigemina. Nissen (*Jahresbericht für Kinderheilkunde*, Vol. 54, p. 645) has voiced this opinion before, and Marburg (*Wien. Klin. Wchnschr.*, 1905) has said more recently that hardly any focal symptoms are due to a destruction of the corpora quadrigemina.

Now while this may be true in a physiological sense, it is not a good policy from a clinical, diagnostic standpoint to circumscribe the corpora quadrigemina so very closely. We must recognize from a practical standpoint that no tumor is going to be strictly localized to the corpora quadrigemina—that tumors, however, do originate here and eventually invade and compress the surrounding territory, and although external eye palsies, disturbances of vision and hearing and ataxia are neighborhood symptoms, that they form such a characteristic syndrome, as to enable us to make such an accurate localizing diagnosis, as to rule out tumors originating from other parts of the cerebellum. The practical importance of this conclusion is that we will, in case we can localize a neoplasm in the corpora quadrigemina, not subject our patients to futile and perhaps fatal exploratory operations. This does not, however, rule out decompression operations, which I believe should be subtemporal rather than suboccipital, because the increased intra-cranial pressure in these cases is due to the development of internal hydrocephalus caused by the compression or occlusion of the canal of Sylvius. If this had been done early in our case it is possible that blindness could have been prevented and the girl's sight have been retained during the last year of her life.

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Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY

October 3, 1911

The President, Dr. L. Pierce Clark, in the Chair

A CASE OF ISOLATED ALEXIA WITH RIGHT HOMONYMOUS HEMIANOPSIA

By M. J. Karpas, M.D., and L. Casamajor, M.D.

The patient was a woman, 23 years old, single, a bookkeeper by occupation and a native of the United States, who was admitted to the New York Neurological Institute, in the service of Dr. Pearce Bailey, on September 9, 1911. The family history was negative, with the exception of the fact that her father was alcoholic. Her early life was uneventful; she had always enjoyed good health.

The patient was perfectly well until August 31, 1911, when she complained of a tired feeling, and while at work she suddenly experienced weakness in the right hand and became dizzy. In her own words, "While writing, my pen fell out of my hand, my right leg dropped from under the chair, and when I turned around to call one of the girls I found that I could not speak." There was no loss of consciousness and no convulsions were observed. Her employer asked her to walk about the office, but she was unable to do so because her right lower extremity was very weak. She was placed on a couch, where she remained until late in the afternoon. She then returned home and for the ensuing three days she had headaches, could not see well, was unable to read and was slightly paraphasic. She could talk, but would use wrong words. Her right hand and leg were stiff, and she complained of peculiar sensations behind the right ear. There was no nausea nor vomiting.

Briefly stated, the young woman was without a history of syphilis, cardiac disease or trauma, and developed rather suddenly a neurologic disorder in which right homonymous hemianopsia and partial alexia were the prominent symptoms. The lesion in this case was most probably far back in the depth of the marrow of the gyrus angularis. The nature of the affection it was difficult to determine. The following conditions would come under consideration:

1. Cerebral hemorrhage. However, no evidence of cardiac disease or arteriosclerosis was obtained to support this assumption.

2. Cerebral endarteritis. This could be excluded by the fact that there was no history of syphilis nor other infectious diseases; moreover, the Wassermann serum test was reported negative.

3. An atypical form of multiple sclerosis. This condition might be ruled out on the ground that there was no history of early visual disturb-

ances nor transient palsies; furthermore, we had no evidence of pyramidal irritation nor incoördination.

4. Brain tumor. The sudden development, the absence of optic neuritis and other manifestations of increased intra-cranial pressure argued strongly against such a diagnosis.

5. An hysterical condition might be thought of, but such a definite symptom-complex and without other hysterical stigmata pointed rather to an organic lesion.

6. Polioencephalitis appeared to be the most probable condition.

Dr. Edward D. Fisher, speaking from the standpoint of diagnosis, thought that some vascular lesion could not be positively excluded. It was always possible to have a slight hemorrhage or embolism which would account for the symptoms in this case. The lesion was apparently a permanent one—at any rate, the symptoms had not entirely cleared up, and taking all the factors into consideration, the speaker said he would be inclined to favor the diagnosis of a slight hemorrhage.

Dr. Frederick Peterson, discussing the possibility of a vascular lesion in this case, said it would be rather unusual to find a patient of this age with a hemorrhage in the brain or elsewhere for which no definite cause could be found. Personally, he was rather inclined to suspect the presence of a small neoplasm, with new vessels, in which there may have been a hemorrhage. Such a small neoplasm might not give rise to an optic neuritis nor more definite symptoms than those present in this case.

A CASE OF BELL'S PALSY OCCURRING IN THE SECONDARY STAGE OF SYPHILIS

By Richard Hoffmann, M.D.

The patient was a young man who entered the New York Neurological Institute, in the service of Dr. Joseph Fraenkel, about a week ago, with a Bell's palsy involving the right facial nerve after its exit from the stylo-mastoid foramen. At the same time, he had a generalized maculo-papular luetic eruption, and the presence of spirochetæ was demonstrated in the blood; Wassermann reaction was positive.

The patient stated that he had his initial lesion about three months ago, the secondary symptoms developing seven weeks later. Three weeks ago, without premonitory symptoms, without pain and with no definite history of exposure, he awoke to find the right side of his face paralyzed, and Dr. Fraenkel had made the suggestion that the palsy in this case was possibly of specific origin.

Dr. Fisher asked what treatment had been adopted in this case. We knew that in paralysis due to luetic involvement of the cranial nerves, rapid improvement usually followed active inunction treatment. If this patient had been subjected to that treatment, and had shown no further improvement than was evident at the present time, it would seem to militate against the specific origin of the facial palsy.

Dr. B. Sachs said the case shown by Dr. Hoffmann reminded him of one which he was asked to see in consultation some time ago, in which the facial palsy appeared shortly after the initial lesion. In that case he felt doubtful as to the justification of attributing the Bell's palsy to a specific neuritis, and the same feeling of doubt might arise in the case shown

to-night. The only justification for regarding the palsy of specific origin was that it appeared very promptly after the syphilitic infection, but a *post hoc* was not necessarily a *propter hoc* argument. It was well known that in alcoholic conditions, as well as after specific infection, the nerves were more or less sensitive, and were rendered more susceptible to factors which might ordinarily not affect them, and we were not in a position, in a case of this kind, absolutely to exclude the ordinary causes of Bell's palsy, such as refrigeration, etc., unless it possessed certain distinguishing features. If, for example, there was involvement of several cranial nerves, then, Dr. Sachs said, he might be willing to accept the theory that this was a case of Bell's palsy of specific origin. Personally, he could not recall a single case of that kind in the literature, and as this case stood at present, the occurrence of the two affections at the same time could only be regarded as a coincidence. This young man stated that he was employed on a railway train, and was necessarily frequently exposed to draughts.

Dr. Smith Ely Jelliffe said that he was practically in accord with the view of the case taken by Dr. Sachs, but he could not agree with him in excluding syphilis entirely as a cause for facial palsy. He believed he had seen a true syphilitic facial palsy coming on at the time of the eruption, and there is no doubt that such cases are reported in literature, as may be verified in both Remak's and Bernhardt's monographs.

In one respect the present picture did not agree with those on record, for only a part of the facial was involved. In the syphilitic facial palsies seen, excluding those due to exudates in the ear canal, or along the nerve trunk, with which type this patient has no alliances, the toxemia being general, involves all of the nerve. Dr. Jelliffe believed that the present case was best explained on the ground of exposure in an individual possibly made less resistant by reason of the infection.

Dr. J. Ramsay Hunt said that there is a group of cases recorded in which a facial palsy is attributed to syphilis, but was usually in association with involvement of the auditory nerve, which would help to distinguish it from the ordinary type. Dr. Hunt said that personally he recalled one case of facial palsy occurring with the outbreak of secondary symptoms of syphilis, and while such an occurrence at this time was suggestive, he was by no means convinced that it was to be ascribed to the syphilis. The same would apply to herpetic inflammation of the geniculate ganglion (herpes oticus with facial palsy), in which he had seen this combination and had regarded it as most likely a coincidence.

Dr. B. Onuf suggested that a Wassermann test made from the cerebrospinal fluid might help in solving the question under discussion. A positive result, while not decisive, would yet tend to confirm the causal connection of the facial palsy with the syphilitic infection.

SENSORY REACTIONS IN THE NEW-BORN

By Frederick Peterson, M.D.

This was a brief résumé of the results of a collective investigation into the mental life of new-born children conducted by him at the Lying-In Hospital of the City of New York. The results represented a study of 1,060 new-born children, the investigations covering a period of about fifteen months during the years 1910 and 1911. During this period a large

amount of material was collected and tabulated, but had not yet been fully digested. The following conclusions embraced a brief résumé of the results:

1. *Sight.*—Sensibility to light was present in most infants at birth, and this was the case even when prematurely born. The optic nerve was therefore already prepared to receive impressions even sometimes before the time of normal birth.

2. *Hearing.*—Sensibility to receive sound was quite as apparent as sensibility to light at birth, for 276 normal white children reacted to sound on the first day of life, and 146 reacted to light. A similar condition existed among the premature infants, many reacting to sound on the first day as well as to light. The auditory nerve was already prepared to receive impressions of sound some time before the period of normal birth. This was wholly contrary to the opinion of other authorities.

3. *Taste.*—The gustatory nerve not only reacted differently to salt, sweet, bitter and sour at birth, but the same mimetic reactions were observed in premature infants. This nerve was therefore ready to receive taste impressions some time before the normal period of birth.

4. *Smell.*—Two hundred and seven normal white children reacted to odors on the first day of birth, and similar reactions were observed in premature infants. The olfactory nerve was ready to receive smell impressions some time before the end of the normal period of gestation.

5. *Cutaneous Sensibility.*—Reactions to touch and temperature, and affective manifestations of discomfort, obtained the first day in large numbers of normal infants, were similarly obtained in premature infants, showing that such sensibility was already present before the expiration of the period of normal gestation. There was every reason to believe that sensitiveness to painful stimuli was present, but the reactions were more vague and uncertain than in later life, which led many to assume that the sense of pain was dull in the new-born. Muscular sense could not be tested in infants, but there was every reason to believe that muscular sense, the sense of motion and the sense of position were developed early in utero.

6. *Thirst-hunger and Organic Sensation.*—The new-born child frequently reacted to thirst-hunger on the first day, though the actual need of food was seldom apparent until after the first or second day. Discomfort was clearly marked when nourishment was not forthcoming. The cries of discomfort and pain were marked on the first day in full term infants and noteworthy in the premature.

7. *The Beginning of Memory, Feeling and Consciousness in the New-born Child.*—There were good grounds for believing that the new-born child came to the world already with a small store of experiences and associated feelings and shadowy consciousness. The fact that even in premature infants we found the senses already prepared for the reception of impressions on the five senses was some evidence of such impressions having been already received and stored up in the dim store-house of a memory already begun. It might even be that some sort of vague light impressions had been received, for it was possible that in the interior of the body the alternation of day and night might in a mild degree be manifested. The translumination of the hands before a candle, of the skull and face bones by examination of the frontal sinuses and antrum with electric lights were evidences of a certain amount of translucency of the whole organism to sunlight, which was so much more powerful than any

artificial light. There was greater possibility in the matter of the auditory sense that it might be stimulated by sounds within the body of the mother (by bone conduction possibly); such sounds as the beats of the maternal and fetal hearts, the uterine and funic souffles, and the bruit of the maternal aorta. Moderate stimulation of the gustatory nerve was thought to occur through the common swallowing of amniotic fluid by the fetus. A marked development of receptivity in the senses of touch and of muscular sense during uterine life was undisputed. Movements began considerably before the sixteenth week of pregnancy and increased in character and extent from that time on. Often they were so violent as to be painful to the mother. This activity of the muscles and constant contact of various parts of the fetal body with the uterine walls for a period of months before birth must lay a foundation under the threshold of consciousness for a sense of equilibrium and vague spatial relations. The material basis of consciousness was prepared long before birth. There was already a feeling tone associated with the earlier reactions, though we were altogether in the dark as regarded its psycho-physiology. The process had been thus formulated: Stimulus—reaction—liking—reinforcement. Stimulus—reaction—dislike or pain—inhibition. This was the early simple associative memory in reactions to stimuli.

8. There were no perceptible differences in reactions of colored and white children or between pairs of twins.

Dr. Jelliffe said a host of suggestions were stimulated by the interesting presentation made by Dr. Peterson. One of the features which it seemed to him desirable to lay a little more stress upon would be the character of the reaction to the stimulus in the analysis of the interpretation of what was meant by the problem of consciousness that Dr. Peterson had suggested. This again brought to mind the observations of a number of students upon acephalous monsters, which had been studied in connection with the various reactions. Also, the observations of Goltz and Rothmann upon dogs and their reactions should be borne in mind, and finally, an excellent piece of work could be outlined in bringing his observations into correlation with anatomical data which the work of Flechsig had so well begun.

So far as the fetal movements were concerned, their occurrence during the earlier periods of pregnancy, during the fifth or sixth months or earlier, could probably be regarded as purely spinal reflexes, because the pyramidal tracts were not myelinated at that period, and cortico-spinal impulses possibly had not begun to travel.

Dr. B. Onuf said it would be interesting to see how closely the observations made by Dr. Peterson conformed to the investigations that had been made upon the new-born in the animal kingdom. Romanes had reported some experiments made upon new-born chicks whose eyes were bandaged immediately upon birth, and when the bandage was removed, two or three days later, it was observed that they were able to pick up the grains of corn with the greatest certainty of motion, but if the bandage was kept on for a longer period than this, they apparently lost this faculty of immediately hitting the corn. While the new-born baby possessed the faculty of suckling immediately after birth, the observation had been made that if it was deprived of the breast for some weeks, the faculty of suckling was regained with some difficulty. These inherited instincts or memories formed an interesting study. In connection with chicks, the observation had also been made that they possessed an inherited fear of the hawk.

Dr. Peterson, in closing the discussion, said that his complete paper, which he had not taken the time to read, contained very careful records of the character of the reaction to which Dr. Jelliffe had referred. Thus far he had not had the opportunity to study the reactions in acephaloids. In connection with the tests of the gustatory sense, it was noticed that the sucking movement was always present and that there was a distinct accompanying expression of like or disgust, depending upon the taste of the substance that was given.

A CLINICAL CONTRIBUTION TO OUR KNOWLEDGE OF POLIOMYELITIS, WITH CORTICAL INVOLVEMENT

By L. Pierce Clark, M.D.

The speaker said it could hardly be supposed that the more extensive study of epidemics of poliomyelitis of recent years accounted for the bizarre clinical manifestations of this disorder which were now of frequent report. The situation would seem of more rational explanation on the ground that the isolated, atypical forms of the disease were overlooked or disregarded in the past. The bulbar and pontine types were now common and well defined, but the cerebral and especially the cortical involvements were still subjects of debate, despite the classic and well-known contentions of Strümpell and his school on the subject.

The existence of a true encephalitic type of poliomyelitis was very difficult to differentiate clinically, as well as pathologically. In the first place, a spastic palsy was not definite proof of cortical or encephalitic involvement, and, secondly, when the autopsy had shown cortical or meningeal alteration, the findings had been susceptible of explanation upon other causative grounds. It was not sufficient to state that an encephalitic type must show a cortical lesion and present evidence of notable meningeal irritation, resulting in hemiplegia which later became spastic, but the character, onset and clinical course of such cases must be a matter of careful inquiry before a diagnosis of cortical involvement was possible. Dr. Clark said he was not aware that any one had reported an exclusive encephalitic lesion in a case of undoubted clinical polioencephalitis. In other words, the clinical and pathological report had not yet coincided in the one case. If the spastic state was therefore not a criterion of cortical involvement, and could only be considered presumptive evidence, what other facts must we include to make the lesion definitely a clinical as well as a pathological fact? Obviously, the presence of chorea or athetotic movement could not be a part of the positive criteria, as lesions giving rise to these symptoms might be and indeed were, most frequently, subcortical in origin. True motor aphasia, enduring mental enfeeblement, such as idiocy and genuine grand mal epilepsy would seem to make the diagnosis of cortical involvement positive. Of all these phenomena, genuine and enduring epilepsy might be definitely considered to make the diagnosis of a cortical lesion most certain. Dr. Clark thereupon reported such a case, as follows:

F. S., aged 18 years. He suffered greatly from indigestion and constipation as a baby, and when two years old he had one teething convulsion. When nine years old, after an accidental fall in the water, he had a single convulsion on attempts at resuscitation. When fourteen years old he had a typical attack of poliomyelitis. He remained acutely ill for two

or three days, could not sit up for several days, and was able to stand only with crutches after two or three weeks. The paralysis improved slowly but steadily from above downward.

When Dr. Clark first saw the patient one year ago for his grand mal epilepsy, attacks of which had occurred regularly two or three times every three or four months since the attack of poliomyelitis, he showed a step-page gait, more marked in the right foot. There was moderate palsy and atrophy in the tibials and peronei of the legs. There was reaction of degeneration and some shortening of both postici. The whole condition was most marked in the right leg. The knee jerks were barely present, being difficult of attainment on the right.

Here, then, was a case of poliomyelitis and epilepsy associated in the same patient. Could it be considered a mere coincidence? The usual mental stigmata of a pure, idiopathic epilepsy were not here in evidence. The disease in its classic form appeared promptly, and had endured since the severe attack of poliomyelitis. Indeed, the first grand mal attack came on pari passu with the fever and prostration of the poliomyelitis at its inception. It would seem that we had strong evidence that this patient suffered a diffuse cortical injury at the onset of the poliomyelitis, leaving organic changes in the cortex producing his epilepsy. The speaker said he could find no similar case on record. The epilepsy responded illy to the usual hygienic plan of treatment so beneficial in pure idiopathics. The case was placed on record as a clinical contribution to the possible occurrence of cortical injury in a case of otherwise classic poliomyelitis.

Dr. Sachs said he was very glad that Dr. Clark had brought up this subject of the relationship between polioencephalitis and poliomyelitis. There was no medical theory that had become more popular than that of Strümpell on this subject, in spite of the very slight evidence that had been adduced to support it. Strümpell's theory was promulgated in order to explain the vast number of cases of spastic hemiplegia and diplegia in children; this theory was constantly being reiterated, but definite proof was wanting that polioencephalitis was the exact analogue of poliomyelitis, although in the report of the Collective Investigation Committee on epidemic poliomyelitis in 1907 the possibility of the rare occurrence of the cortical type of the disease was admitted.

Dr. Sachs said he had seen at least one case which seemed to justify the theory that he was dealing with the cerebral counterpart of the ordinary form of poliomyelitis. The patient was a child, eighteen months old, that was brought to him in order to decide whether a surgical operation should be performed. The history was that a few months previously the child was seized with convulsions, followed by fever, which lasted several days. Subsequent to this the child was said to have been paralyzed, although he had been unable to learn whether the paralysis was unilateral or bilateral. The faculty of speech had been lost, and the right facial palsy, which had persisted, was distinctly of a cortical type. There was also slight paralysis of the right upper extremity; none of the leg. All the symptoms, apparently, were receding rather rapidly. There was no increase of the deep reflexes of the upper extremity, and the knee jerk on the right side was absent. Basing his opinion upon these symptoms, Dr. Sachs concluded that it was not a case for operation, and that in all probability it was an example of the cerebral type of poliomyelitis. This was the first case he had ever seen where he felt tempted to make a diagnosis of the cerebral form of poliomyelitis. At all events, these cases

were extremely rare and could not be regarded as arguments in favor of Strümpell's theory.

In the case reported by Dr. Clark, the occurrence of epilepsy closely following a poliomyelitis was very interesting. Of course, the possibility of its being a coincidence had to be considered.

Dr. Jelliffe said that Dr. Clark's position was difficult to grasp. From his title it would be assumed that he reported a local encephalitic focus, due to poliomyelitis, resulting in an isolated epilepsy, whereas the burden of his paper was to disprove or reject such an interpretation. With the purpose of the title he would agree with him, and not with Dr. Sachs—from his argument he felt he would have to dissent.

If we have learned anything of poliomyelitis, in the many recent studies, it is that the pathological alterations are very widespread, and practically all of the severe cases have some encephalitic extensions. But clinically many of these encephalitides do not appear on later investigation, whereas the predominance of cord, bulbar and pontine changes is well recognized. Hence it has been argued that local encephalitides are rare. This is more apparent, however, than real, and for very good reasons, which a study of the pathological alterations reveals.

The foci of cellular reactive changes in poliomyelitis are usually small and diffuse. In small structures, such as the cord, pons, medulla, these small foci create more or less permanent and apparent damage by reason of the concentration of ganglionic cells and tracts within small areas. In the cortex, however, where motor as well as sensory representation is spread over a comparatively large area, the destructive process would have to be more extensive than is usually observed in this disorder. It would require a larger collection of inflammatory foci to produce the apparent and permanent loss of cortical functions either in the motor or sensory sphere. Then again the well-known fact that both cortices are represented on each side, and in different individuals in varying proportion according to the percentage of pyramidal fibers crossing would tend to minimize any clinical expression even of rather severe anatomical defect.

These pathological and anatomical facts Dr. Jelliffe held were sufficient to create the impression that encephalic extension was rare in poliomyelitis. His own belief was that pathologically it was common, but clinically less demonstrable.

As to the possibility of isolated epilepsies, as an expression of a poliomyelitis, he believed it to be highly probable, and most modern writers speak of it, notably Wickman, Müller, Zappert, Römer. It is not the rare phenomenon that apparently Dr. Clark claims. The case reports of Medin, Henschen, Bergmark indicate this.

With reference to Dr. Sachs's remarks, a propos of Strümpell's acute polioencephalitis of children, he agrees in part, as far as the interpretation of Little's disease, the diplegias, etc., was concerned, but this question is not under discussion. There are a number of encephalitides of children, as Strümpell claimed; some of them are Heine-Medin's Disease; the work of Plaut has shown that a large number are syphilitic, and future research will possibly resolve them all to their etiological foundations.

Dr. Hunt said he had seen a number of cases of what he had thought to be encephalitis in children, and these could be arranged in two groups. In one, the symptoms indicated a pretty general involvement of the cortical structures with marked meningeal symptoms (meningo-encephalitis); in the other the only focal symptom was an isolated hemiplegia, and he had

never been able to interpret them in any other way than as cases of polioencephalitis, as described by Strümpell. These cases occurred in children who were free from heart lesions and were otherwise in good health, so that a thrombosis could in all likelihood be excluded, and they certainly formed a very interesting and rather puzzling group of cases.

As to the case reported by Dr. Clark, the patient gave a history of having had convulsive seizures prior to the onset of the poliomyelitis. With such a history, Dr. Hunt said, he would be inclined to regard the coëxistence of the two diseases as a mere coincidence and the diseases as not in any way dependent upon one another, except that a preëxisting epilepsy might be aggravated by a poliomyelitis.

Dr. I. Abrahamson said that recently at Mt. Sinai Hospital he saw a girl, 17 years old, who shortly after birth had a series of mild convulsions, followed by an acute febrile condition and generalized paralysis and twitching. From this she made an incomplete recovery, and to-day she presented a picture of the juvenile type of multiple sclerosis. Many of these cases, the speaker thought, were really of this type. In these cases of mixed multiple sclerosis and paralysis agitans observed at an early age there was usually a history dating back to infancy.

Dr. Peterson said he shared the suspicion of Dr. Sachs that the theory of Strümpell had not been wholly substantiated. Personally, the speaker said, he had never seen a case in which he felt justified to make the diagnosis of polioencephalitis, nor did he consider that Dr. Clark's case was a contribution to that class of cases. He was rather inclined to believe that the epilepsy dated back to childhood and that the poliomyelitis was simply an episode in the history of the patient. He had never been convinced that there was such a thing as polioencephalitis which was analogous to poliomyelitis. If such a condition existed, it was certainly very rare.

Dr. Clark, in closing, said the possibility of a coincidence in the case he had reported had struck him very forcibly, but a careful analysis of all the factors bearing upon it, the rapid and acute onset of the convulsions, their definite type, and their occurrence with the poliomyelitis, led him to the conclusion that the epilepsy was directly related to the poliomyelitis. It was true that this patient gave a history of having had two mild convulsions in early life; the first during the period of dentition, when we knew that convulsions were very common and rarely developed into permanent epilepsy; the second, after accidental immersion, when he was nine years old.

As to the frequency of epilepsy in poliomyelitis, Dr. Clark said that a very careful review of the literature had convinced him that this must be extremely rare. In the case he had reported he was convinced that there was a diffuse cortical lesion; there was nothing about the epilepsy to indicate a Jacksonian type.

ADIPOSE PITUITARY SYNDROME OF LANNOIS WITH NARCOLEPTIC FITS, BUT WITHOUT GENITO-URINARY SYMPTOMS

By Tom A. Williams, M.D.

After a year of vague malaise with headache, a sales-girl of twenty-five had for four months begun to fatten enormously, so that from 141 pounds she increased to 184 pounds. After various advice without benefit,

she consulted an orthopedist, Dr. Dunlop, for she believed that she had sciatica, because of the heavy pain in the back and the dragging weight and tenderness of her legs.

Headaches of a dull and heavy type interfered with her pleasure and interest in life, and produced a marked loss of memory and absence of mind. Now and then, indeed, she would fall suddenly fast asleep, even falling over, utterly unable to resist the torpor which seized her. Sometimes in those attacks, she spoke absurdly and even sang. It was this behavior which led to the consultation with the writer. Vomiting was rare and there was no true vertigo. But now and then the vision dimmed suddenly, and the lines she read would blur. The headache was said to be deep and low in the middle of the head, and felt sometimes like a bursting.

On examination, the organs were intact; but there was great hypertrophy of the body fat, but none of the bones or mucous tissues. The increase of size was asymmetrical without preponderance upon either side. Thus the left thigh measured 28½ inches, the right 28¼. The left knee 16 inches, the right 17⅛, the left ankle 9¾, the right 9 inches, etc. The veins of the thighs were congested; so was the conjunctiva. The X-rays showed a deepening of the sella turcica.

A neoplasm in or around the pituitary body was diagnosed, because of the deep headaches, the heaviness and sleepiness, the hypertrophy of the fatty tissues, and the changes in the visual field.

The treatment followed that of Béclerc and Jaugeas, consisting of exposure of the pituitary region to Röntgen rays from four different points of the temporal region for about ten minutes every week. The narcolepsy at once ceased, the headaches were diminished, the reflexes became less active and the visual field improved.

In spite of some interruption to treatment the patient remained well some six months, though the weight had not diminished in spite of a restricted diet. It is intended to administer thyroid gland, in the hope of increasing the metabolism.

Translations

THE THEORY OF SCHIZOPHRENIC NEGATIVISM

By Dr. E. Bleuler

of zurich

Translated by William A. White, M.D.

superintendent of the government hospital for the insane, washington, d. c.

(*Continued from p. 57*)

Such blocking in thought and will may also occur in the absence of negativism, but negativistic disturbance of the will is conditioned by a contrary will, an "opposition." It is therefore fundamentally different although the two causes may occasionally overlap as the negativism is also colored with affect.

It appears to us that Kraepelin has laid too much weight on the seclusion from outer impressions. There are negativistic patients who are interested in everything, who tease others and generally seek stimuli from without. The schizophrenic repelling of outside influences ("Autismus," see below) does not necessarily express itself in a sensory declining, but only in the selection of the impressions and their elaboration.

Hoche[3] defines negativism as "the systematic resistance against external influencing of the will and also against impulses arising from within. Here we must replace the "systematic" that implies too much conscious activity by "instinctive" or "impulse-like," as Kraepelin rightly says, no intellectually understood motives play a part; further "systematic" can not indicate a continuous type of conduct for the negativism does not appear at every opportunity, and it may be added, that the resistance may lead to the doing of the opposite. Furthermore, the definition also ignores intellectual negativism.

The behavior of the psyche of the patient towards the nega-

[3] In: Binswanger und Siemerling, Lehrbuch der Psychiatrie. Fischer, Jena, 1904. S. 258.

tivistic symptoms is very variable. They may be fully united with the conscious psyche; the patients are then conscious, refuse voluntarily and then are irritable if one desires something of them, exactly like a well person, who wishes to know nothing of his environment. At the other extreme the negativistic activities emerge from the unconscious (as the voices and delusions); the patients are themselves surprised by them; they even defend themselves against them for some time; they wish to be agreeable, to follow orders, but are not able to do so. Contrary impulses and inhibitions of all sorts prevent the patients from doing what they have in view, so that commonly they believe in the influence of a strange force. All gradations intervene. So long as the patients are left alone they generally relate themselves very well to the surroundings, and may resolve that they will not now react negativistically; when the opportunity occurs, however, they are protesting and irritated; they themselves wonder at such changes of mood and affect and can not discuss the matter.

An attempt has been made to explain negativism by proceeding from the motility, from muscular disturbances. Lundborg[4] finds a similarity between the catatonic muscle phenomena and myotonia and thinks, that many patients in spite of wishing to, cannot move and therefore are apparently negativistic. He even brings the stereotypies, which lead to round-about impracticable movements, into relation with this disturbance. This parallel with myotonia, shows that the author transposes the root of negativism to a centrifugal process, and thinks of this at least as peripheral; that the departure of the motor stimulus starts from the cortex, or possibly even in the muscles. I do not want to deny, that the outer picture of negativism may be produced through not being able to act, but not through a motor hindrance, but as the result of a psychic interference, like a child, who is bashful before a stranger, from whom he can not take a bonbon, even though anxious for a sweet.

We have to do then with the inhibition of a purpose brought about by a contrary affect. This also occurs naturally in schizophrenia, but it is probably preferable not to call this phenomenon negativism in spite of the external resemblance. In spite of all

[4] Beitrag zur klin. Analyse des Negativisums bei Geisteskranken. Zentralblatt f. Nervenkrankh. und Psychiatrie, 1902, S. 554.

my effort I have been unable to see a true motor disturbance in dementia præcox either at the root of negativism or elsewhere. At all events there is nothing to observe in many cases with negation that one could even remotely explain as a motor symptom; for many hyperkinetic patients are negativistic and vice versa the negativistic reactions frequently lead to very energetic and active muscular movements. The hypothesis, at best, can have only limited validity.

R. Vogt[5] discusses this theory but definitely localizes the difficulty of action in the motor centers. According to him there persists (as in the catatonic brain) a tendency to perseveration which manifests itself especially in the antagonists. In this way movements are made difficult, and this condition produces in the psyche a disinclination to movements in general.

In view of the general disassociation of the schizophrenic psyche, the undoubtedly common tendency to perseveration might be assumed to affect especially the antagonists in individual cases; but no one has yet observed it. But, negativism never stands in a definite quantitative ratio to the degree of perseveration, and above all, those cases do not escape where there is no trace of perseveration, and in which the movements are in no way impeded. So Vogt's view can not be right.

Roller[6] has already expressed similar ideas to those of Lundborg and Vogt, as he likewise sought to derive the negativistic "will not" from a "can not" as the result of disturbances of innervation and besides conceived, that the contraction of the antagonists by way of their "re-innervation" called forth the will to contrary action.

Alter[7] also considers negativism a motor phenomenon. His "primary negativism" springs from schizophrenic tonic rigidity. He assumes, as fundamental, a molecular alteration in the nervous system produced by toxins which makes possible sejunction in the paths of the protagonists. The exciting cause of the sejunction is the attention, which easily inhibits what one wills. Through the sejunctive inhibition in the protagonist paths the impulse is directed to the antagonists.

[5] Zur Psychophysiologie des Negativisums, Zentralblatt f. Nervenheilk. u. Psychiatrie, 1903, S. 85.

[6] Motorische Störungen bei einfachem Irresein, Allgem. Zeitschrift f. Psychiatrie, Bd. 42, S. 1.

[7] Zur Genese einiger Symptome in katatonen Zuständen. Neurol. Centralbl., 1904, S. 8.

The existence of a catatonic tonus, as a true motor symptom is to me very questionable. My positive observations are limited to motor phenomena elicited by psychic factors and which are again removable by psychic means. On the other hand one often feels a mild resistance in the passive movements of schizophrenics even when the patient willingly surrenders himself to all experiments. One cannot deduce negativism from this, as a strong resistance is precisely the result and not the cause of the psychic reluctance.

Active negativism can not be interpreted anyhow by a roundabout way through the antagonists. The innervation of the antagonists makes no retrogression from a progression, nor does it make a "no" from a spoken or written "yes." All of this requires quite special muscular coordinations.

The theories which explain the unwillingness to act by a motor difficulty, and which deduce, from the innervation of the antagonists, the idea and the will to an opposite action, are certainly wrong; in the first place, because a motor difficulty for the most part does not exist, and if it did, it would not be able to produce the motor phenomena of negativism; in the second place, because innervation of the antagonists only exceptionally leads to a contrary action.

Wernicke[8] considers negativism and pseudo-flexibilitas as modifications of flexibilitas cerea, "which appear with retained possibility for any voluntary influence." The attempt at passive movement is perceived within the cortex. At times it arouses the idea of the movement to be executed and renders easier the corresponding action of the will, at other times the thought of the impossibility of executing the movement arises, that is, to the idea of the movement to be executed is associated at the same time the inhibiting thought of an expected outlay of strength, which appears very great in the subjective estimation. The effect of the will thereby becomes reversed. Why at one time negative, and at another time positive ideas are awakened is not explained by this theory, just as it does not explain why a passive movement should ever arouse ideas of the impossibility of executing the movement and of the expected outlay of force, and still less, how out of it can come the exhibition of strength of an often energetic resistance. The hypothesis forgets alto-

[8] Psychiatrie, Aufl. I, S. 453.

gether, that only a small part of the negativistic phenomena is expressed as resistance to passive movements, while expressions of protest, contrary actions, and cross impulses are much commoner. Also when one puts instead of "passive movements" "any demanded movement," this view is not rendered any more plausible. We would have to find occasionally the idea of impracticability and demand for effort at the root of negativism. This I have never found. We see on the contrary aversion to mental or physical effort quite commonly without connection with negativistic expressions; one symptom may be lacking, while the other is present, and where both are found together, one notices no parallelism in their intensity.

For the comprehension of Wernicke, his further view, accepted by others, is significant, that a partial negativism occurs in single muscle groups. Observation has never given me any proofs for such an assumption. I have learned to know negativism only as a psychic phenomenon, with its expressions governed by ideas, not by anatomical conditions. Also I have been able, up to now, to localize the motor phenomena of schizophrenia only in ideas, although obliged to assume, that one of the predisposing causes lies outside the psychic area. (Perhaps something akin to brain torpor?).

The psychic theories of negativism, for the most part, have no regard for the irregularity of its expressions. Thus the theory of Raggi[9] and Paulhan, who assume a contrast association, bringing out an action opposite to the one originally thought; or that of Sante de Sanctis,[10] in whose opinion the spirit of negation inherent in us outweighs the remnant of resistance of the ego. With such "explanations" the question is shelved behind a not very accurate circumlocution of the phenomena. Still less can we take up with the assumption of a "nolition,"[11] so long as this idea is not deduced from the elementary psychic manifestations.

In France and in part in Italy, negativistic phenomena, are frequently grouped with nihilistic ideas, and explained under

[9] Psych. Kontrasterscheinungen bei einer Geisteskranken, Arch. ital. per le malatie nerv., Bd. 24, Ref.; Allgem. Zeitschrift f. Psychiatrie, 1887, S. 58.

[10] Negativismo vesanico e allucinazioni antoganistici, Bull. della soc. Lancisiana degli osped. di Roma, XVI, 96. Ref. Zeitschrift f. Psych. u. Physiol. der Sinnesorgan, Bd. 13, S. 397.

[11] Centralbl. f. Nervenhkd. u. Ps., 1906, 622 (Dromard).

the name of "ideas of negation." Naturally we cannot discuss with these authors, as the two symptoms are for us totally different.

Anton[12] calls attention to the fact that many hebephrenics are pathologically suggestible and are more or less aware of it; they utilize therefore an elaborate refusal as a kind of psychic self regulation, as a protection against unpleasant influences. For this reason negativism makes a distinction between superior persons and such as are of equal or of lower station than the patient, in that it expresses itself more fully towards the former. Negativistic behavior, apart from schizophrenia is frequently noted also by us in genetic relationship with exaggerated susceptibility partly as the second side of the same affect disposition which may express itself positively and negatively partly as an instinctive (more frequently than a conscious) protective measure. Precisely in schizophrenia, however, positive and negative suggestibility do not by any means always run parallel, one with another, in course and strength. We believe that such factors essentially cooperate in the origin of negativism, but that the symptom, however, must have still other and indeed more important roots.

Schüle[13] assumes a "contrary direction of the will," which is conditioned through the anxious helplessness; it expresses itself first in simple, then in contrary (active) negativism. This "anxious helplessness" is too commonly wanting in negativistic patients for us to deduce the phenomenon from it. Yet there is something true also in this conception, in so far as lack of understanding of the environment usually leads to negativistic reactions.

Gross[14] refers first to the helplessness as causing the "affect state of negation." This alone, or in conjunction with inhibition, produces a form of negativism. According to him, there is, however, in addition a "true catatonic (psychomotor) negativism," that is, "a complex of phenomena, which form the expression of a series of psychophysical processes separated from the continuity of the ego, in no way related with the psychic processes of

[12] Nerven- und Geisteserkrankungen in der Zeit der Geschlechtsreife, Wiener klin. Wochenschrift, 1904, S. 1161.

[13] A. Zeitschrift, Bd. 58, S. 226.

[14] Die Affektlage der Ablehnung. Monatsschrift für Psychiatrie und Neurologie, 1902, Bd. XII, S. 359. Beitrag zur Pathologie des Negativismus. Psychiatrisch-neurol. Wochenschrift, 1903, V. Jahrg., S. 269.—Zur Differential-Diagnostik negativistischer Phänomene. Psychiatr.-Neurol. Wochenschrift, 1904, Bd. VI, S. 345.

the conscious personality, and therefore inaccessible to any introspective after contemplation." There is thirdly a "psychic" or "total" negativism, which is compounded of the two first forms. The conception of the second form can not be correct. While it is true that schizophrenic psychisms can functionate fully dissociated from the ego-complex, this does not answer the question *why* precisely such phenomena become negativistic. In reality such psychic automatisms can be negativistic or not, in the same manner as conscious functioning processes. On the other hand the idea of an "affect state of negation" contains an element of truth although it is not a genetic explanation of negativism. One can ascribe to all these negation processes a common component, the negation, and the negation, as with all conflicts, is associated with an affect, so that the term cannot be entirely repudiated as a circumlocution of the affective volitionistic part of the negativism. However, the idea is not at all clear, and keeping in mind the different moods in which negativistic symptoms appear, the identity of the affective phenomena, grouped together as the "affect of negation," must be doubted.

Kleist[15] also assumes a peculiar "feeling," which he parallels with the "feelings of anxiety, of anger, of joy," thus, according to our terminology, an affect is made the foundation of the negativism. In some cases it is expressed as a painful sensation of weakness in the heart, in others as an unmotived anxiety. Why it appears, the author leaves unexplained, but that is precisely what we wish to know in the first place. I must again raise the objection that I have not been able to make out a "peculiar characteristic feeling" that was the same in each case of negativism.

[15] Weitere Untersuchungen von Geisteskranken mit psychomotorischen Storüngen. Leipzig, Klinkhardt, 1909, S. 97 f.

(*To be continued.*)

Periscope

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(Bd. 48. 1911. Heft 2)

XIV. The Puerperal Psychoses. MEYER.
XV. Diagnosis and Treatment of Tumors of the Fourth Ventricle. ANTON.
XVI. Gestation Psychoses in Women. RUNGE.
XVII. The Treatment of Neuralgia by Means of Injections of Alcohol Into the Nervous System. PUSSEP.
XVIII. The Dietetic and Medicinal Treatment of Celebral Functional Disturbances and Psychoses Depending upon Diseases of the Stomach. PLÖNIES.
XIX. A Contribution to the Etiology of the Korsakow Symptom Complex. FRAENKEL.
XX. The Spinal Localization of the Glutei Muscles. SALOMON.
XXI. A Contribution to the Statistics and Clinical Course of the Puerperal Psychoses. JOLLY.
XXII. Pathological Anatomy and Pathogenesis of Multiple Sclerosis. SIEMERLING and RAECKE.

XIV. *Puerperal Psychoses.*—Meyer concludes from his study of gestation psychoses that alterations of the nervous psychic equilibrium are the most frequent conditions of this psychosis, and also that neuro- and psychopathic tendencies are most often aroused or increased at this time; whence it is to be assumed that the period of gestation merely brings to a climax the tendency toward mental disorder. It is to be assumed that the period of gestation is merely indirectly a cause of the nervous or mental disturbance through the general weakening of the nervous system.

XV. *Tumors of Fourth Ventricle.*—Anton gives the history of five cases of tumor of the fourth ventricle, and reaches the following conclusions from his study: that a puncture through the corpus callosum or a puncture of the ventricle relieves the pressure in the posterior fossa, as well as the pressure in the fourth ventricle. A relief of pressure in the third ventricle may likewise be secured through a callosal puncture. It is even possible in the hands of experienced surgeons to lay bare the region of the fourth ventricle, and through the foramen of Magendi or from the upper worm of the cerebellum, to penetrate into the fourth ventricle. Even should the tumor or cyst lie in the cerebellum, an exposure is no longer impossible in the hands of a skilled operator. A frequent origin of tumors is the dorsal plexus of the fourth ventricle with subsequent growth against the cerebellum rather than against the pons or oblongata. The value of X-ray pictures in determining the position of tumors is insisted upon, and the opinion is expressed that further experience will render this method of diagnosis of increasing value.

XVI. *Gestation Psychoses.*—Runge discusses at great length, on the basis of many statistics and considerable personal observation, the general

question of the gestation psychoses. The article is so written that reference to the original must be made to get a definite insight into the conclusions of the writer. In general, he is of the opinion that the prognosis of these psychoses is to be regarded as favorable.

XVII. *Alcohol Injection.*—The important therapeutic measure of alcohol injection in neuralgia of various forms is discussed by Pussep with particular reference to the treatment of trigeminal neuralgia by this means. A widening experience demonstrates that alcohol injections are of very distinct value, even in the worst cases. A section on the method of injection and the statistical results in thirty-six cases are of value as an indication of the means and results of this method of treatment. The study of upward of six hundred cases appearing in the literature together with those of the author seem to demonstrate a large percentage of cures and the relative harmlessness of the procedure. It is possible after repeated injections in the nerve to bring about a complete degeneration of its fibers. The method may also be used in intercostal and root neuralgia with distinct advantage, and also without danger.

XVIII. *Cerebral Functional Disturbances in Diseases of the Stomach.*—Plönies discusses in this paper in somewhat theoretical fashion the question of mental disturbances in connection with the treatment of stomach diseases. The paper is of special value as indicating the important relations existing between questions of diet and treatment of the gastro-intestinal tract in children in connection with mental disturbances, and is a useful attempt to demonstrate the close relationship, often ignored, between the different organs.

XIX. *Korsakow Symptom Complex.*—Fraenkel draws attention in this paper to the recognized and interesting fact that persons after strangulation with loss of consciousness present on recovery symptoms closely resembling those occurring in the so-called "Korsakow symptom complex." He offers in this communication a valuable contribution to this subject on the basis of a carefully observed case of attempted suicide by hanging, whereby he insists that he has brought proof that the mental disturbances after strangulation are to be referred to a direct injury of the brain rather than, as has previously been supposed, to hysterical conditions. The similarity of the mental symptoms observed to those occurring in the Korsakow psychosis are striking and point to a certain similar cerebral etiology.

XX. *Glutei Muscles.*—Salomon has studied the localization in the spinal cord of the glutei muscles in connection with an injury to the sacral cord, and concludes that it is altogether probable that the nuclei for these muscles lie beneath those for the tibial group, namely, in the lower part of the second sacral segment. This opinion was, however, not confirmed by autopsy.

XXI. *Puerperal Psychoses.*—In considering the puerperal psychoses, Jolly reaches the following conclusions: The percentage among hereditarily predisposed individuals is essentially the same as for the other psychoses, which usually affect women between the twenty-fifth and thirty-sixth years. The psychoses for the most part belong to the group of amentia. The cases in the manic-melancholic group show no special tendency to recurrence. Catatonia gives an absolutely unfavorable prognosis. Forty-six per cent. of the patients studied were fully cured. A recurrence occurred on an average after three years and eight months. In general, the prognosis is unfavorable in congenital mental defect, in cases of chronic onset, in those having suffered previous mental disease in

youth, and in those without special cause. The favorable cases are those following infection and exhausting conditions. The length of the psychosis was longer in persons with bad heredity, in women over thirty, and in certain other conditions; shorter in those in whom the mental disturbance came on within the first two weeks after the birth and in those occurring in connection with an infection. Of the thirty children of the mothers studied up to the time of writing the paper, three were mentally defective.

XXII. *Multiple Sclerosis.*—Siemerling and Raecke offer a contribution to the much-discussed subject of the pathology and pathogenesis of multiple sclerosis, and conclude that in the patches of sclerosis, there is definite evidence of an inflammatory process related to the blood vessels, at first manifesting itself by capillary hemorrhage with slight but definite loss of fibrillæ, with greater destruction of mylene sheaths, whereas the overgrowth of glia is to be regarded partly as a reaction to the irritant and partly merely as a scar formation.

E. W. Taylor (Boston).

Revue Neurologique

(Vol. 19, No. 11. June 15, 1911)

1. Infectious Psychosis and Mental Confusion; Loss of the Idea of Time. Wallon and Gautier.
2. Lesions of the Cervical Sympathetic in Exophthalmic Goiter. Horaud.

1. *Infectious Psychosis.*—The case reported was in a child, fifteen years old, blind from birth, who developed a purulent pleurisy and, accompanying this, marked mental confusion, with some ideas of persecution and negativism. The patient vomited a large amount of green pus and, with the clearing up of the lung condition, the mental condition returned to normal. A relapse of the lung condition was accompanied by the return of mental symptoms. The most marked symptom of the mental confusion was the loss of all idea of time. The author discusses the relations of infections to psychoses, especially those of the ear and about the head, and the infections of influenza and tuberculosis. The condition has a considerable resemblance to Korsakow's disease.

2. *Lesions of the Cervical Sympathetic in Exophthalmic Goiter.*—The superior cervical sympathetic ganglion was examined histologically from two cases in which it had been removed for the relief of exophthalmic goiter symptoms. The nerve cells were markedly affected, the pathological process in some being acute, in others chronic. The connective tissue was hyphertrophied and the blood vessels increased in number and volume. The nerve trunks were less altered than the ganglia and showed increase in connective tissue and blood vessels.

(Vol. 19, No. 12. June 30, 1911)

1. Chronic Inflammation of Suprarenal Gland with Pigmentary Tumor of the Right Iris and Myosis on the Right Side. Periodic Attacks of Acute Asthenia with Hallucinations and Mental and Motor Agitation. Gallais.
2. On the Tic Known as the Salaam. Ascenzi.

1. *Chronic Inflammation of the Suprarenal.*—The patient, who was forty-nine years of age, had a tuberculous hip at about the age of nine-

teen and shortly afterwards it was noticed that he had some pigmentation of the skin. During his life he had twelve attacks of mental trouble characterized by the sudden appearance of extreme lassitude and asthenia accompanied in some cases by maniacal excitation, in other cases by hallucinations, insomnia and trembling, and in still others with melancholia. On examination it was noted that he had a marked pigmentation of the skin, that the right pupil was punctiform, the myosis being probably due to the presence of a pigmented tumor of the iris. The case is particularly interesting because it combines in one person the various syndromes which have been described as due to the disease of the suprarenal: the encephalopathy, described by Klippel; the neurasthenic form, described by du Four and de Fursac; the melancholic form, by Laignel-Lavastine; and the ordinary form of Addison's disease showing the hyperpigmentation

2. *On Tic Salaam.*—The tic salaam is a rare condition. Ascenzi reports a case in an infant two and a half years of age. At the age of nineteen months, when dentition was well advanced, the infant began showing the attacks of inclination of the head, with fixation of the eyes. These attacks were repeated from two to ten times a day and each attack consisted of about fifteen inclinations of the head in about two minutes. Accompanying these attacks there was some general rigidity of the body and a mental distraction. Neurological examination of the infant was negative. The attacks ceased under bromide treatment. The author considers that this case was epileptic in nature. He discusses also the possibility of the spasms of inclinations of the head being due to infectious diseases, dentition, rickets, brain tumor, and reflexes from the labyrinthine diseases.

C. D. Camp (Ann Arbor).

MISCELLANY

The Larynx in Paralysis Agitans. San Rat. Graeffner. (Berl. kl. Woch., 1911, No. 38.)

Graeffner has studied the action of the larynx very exhaustively in hemiplegia, tabes, and multiple sclerosis and now turns his attention to this muscle group as it is affected in paralysis agitans. He first calls attention to the difficulties in making observations and particularly in not being misled by false tremors. True tremor is present in the vocal cords as in other muscles of the body. At times it may be isolateral with that of the upper extremity, again contralateral. In 80 cases, 21 showed tremor of the entire larynx in the tempo of the body tremor. In 27 the tempo was different; in 32 there was a lack of true vocal cord tremor. In 5 of 8 cases of paralysis agitans, without agitation, there was tremor of the larynx. The tremor shows itself best in the open position of the vocal cords. In 12 cases the adductors were involved. In a few cases the variability in tremor on opposite sides of the body was also present in similar grade in the larynx. The pharyngeal reflex was absent in 20 of 34 cases, 9 times markedly diminished. Mendel's observations in reference to a loss or diminution of the Achilles reflex were not borne out in 28 cases, but it was found modified in a number of cases. Graeffner interprets this more as being in conformity with the general findings in the senile or arteriosclerotic.

Jelliffe.

Book Reviews

Medizin und Strafrecht. Ein Handbuch für Juristen, Laienrichter und Aerzte. Herausgegeben von Geh. Med. Rat. Dr. Strassmann. P. Langenscheidt, Berlin. G. E. Stechert & Co., New York.

Modern criminology is going through a stage of literary activity. Behind this rich output of works, bearing on the question of the criminal, one can see the intenser study that is going on—a study that is demanded by the social body in order to relieve it somewhat from its burden, if possible.

Hence this volume as one of a large Encyclopedia of Modern Criminology, one volume of which, by Wulffen, we have already brought to the attention of our readers.

The present work takes up the general methods of forensic medicine, with an introductory chapter on the anatomy and physiology of the human body. Then follow chapters on conception and death; forensic examination of the blood, spermatic fluid and hair. Violent death through strangulation, hanging, choking, drowning, shooting, poisoning and other methods is taken up in a second chapter.

A third deals with forensic psychiatry, with methods of investigation, and a rapid summary of the forms of mental disorder, in which the following show the nosological trend of the writers. Melancholic and Manic States, Paranoid States, General Paralysis, Senile Dementia, Toxic Psychoses, Feeblemindedness and Juvenile Dementias, Epilepsy, Hysteria, Neurasthenic and Psychopathic Constitutions.

A fourth chapter deals with Sexual Crimes, Abortion and Moral Lapses.

While somewhat diffuse, the work has much merit. It is thorough and approaches the problems from their practical sides. Works of this high grade are much needed by those who come in contact with these problems, and this particular volume has our hearty endorsement.

Jelliffe.

The Life and the Doctrines of Philippus Theophrastus, Bombast of Hohenheim. Known by the name of Paracelsus. By Franz Hartmann, M.D. The Theosophical Publishing Co., New York.

Paracelsus has always been a commanding figure. His energy alone was commendable, even if considerable suspicion may be attached to his methods.

We have here a life of Paracelsus which brings the magical and supernatural side of his work into prominence. The very features for which he has been most condemned here constitute his glory. Hartmann's life of Paracelsus is appreciative, if not critical, and is a welcome addition to the biographies of this strange personality of the middle ages.

Jelliffe.

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Original Articles

THE CAUSES OF DEATH IN TABES[1]

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People suffering from chronic, degenerative diseases of the spinal cord do not, as a rule, die from them but from some general affection such as arterial sclerosis, or some acute or chronic infection, such as pneumonia or phthisis, which attacks organs outside the spinal cord. This is typically true of tabes, for though sometimes the cord disease may be indirectly the cause of death, as when the difficulty in micturition causes cystitis leading to urethritis and later pyelonephritis, or when trophic bedsores appear and septicemia results, as a rule the disease which causes death arises entirely outside the cerebrospinal axis. What causes death is from one point of view only of theoretic interest, but looked at from another, that of the therapeutist, the pathological conditions other than the nervous likely to arise during life and finally cause death are of practical importance, because forgetting or overlooking them leads to neglecting measures of treatment which, while not influencing the tabetic process or only indirectly doing so, not only prolong life but make existence more bearable. I think many physicians are too prone, when examining a patient with tabes, to disregard everything except the symptoms referable to the cord, and consequently to approach

[1] Read at the meeting of the Philadelphia Neurological Society, January, 1911.

the problem of therapeutics with a too extreme pessimism. They are too inclined to feel nothing can be done for tabes and therefore neglect to treat the patient's heart and lungs and other organs. If we pay some attention to the whole man we may give him some relief, or at least make him better able to carry his burden.

The following report of thirty-four cases shows quite well the usual causes of death, the non-nervous lesions which are most frequently associated with tabes, and the conditions which can be alleviated by general therapeutics even though they are irremediable. It is sometimes more difficult than one would think to decide in a given case, even at the necropsy table, what was the immediate cause of death. The necropsy may reveal disease of so many important organs as to make it impossible to determine which first totally failed to perform its function or whether two or more did not fail simultaneously. In the summary of cases I have put down as the immediate cause of death the disease of the organ which seemed most at fault or the pathological process which was most widespread. In cases in which an acute infection, such as pneumonia, occurred in a patient who already had some chronic affection, such as chronic myocarditis, I have regarded the acute infection as the immediate cause. It must be remembered, however, that all the lesions found at necropsy may have, and surely sometimes do have, a direct influence in causing death. Good examples of the difficulty in determining which organ is responsible for death are the cases in which chronic myocarditis, chronic nephritis, arterial sclerosis and edema of the lungs are all present. Probably in one case the pulmonary edema, itself the result of other lesions present, caused death mechanically, probably in another the heart ceased to perform its function, and probably in a third there was uremic poisoning. But in all all these factors had some part. Of course from the point of view of the pure pathologist it is not a matter of great importance because the nephritis, the myocarditis and the arterial disease are all simply different manifestations of the same pathological process.

I omit all details of the clinical histories. Cases in which there was the slightest doubt of the correctness of the diagnosis have been excluded. In drawing conclusions it must be remembered that the patients were all inmates of the Philadelphia Gen-

eral Hospital, and let me here thank my colleagues for permission to use their patients. A series of cases from private practice made up of patients of a higher class who lead more protected lives might show somewhat different conditions in the abdominal and thoracic viscera. Chronic myocarditis, chronic nephritis, and arterial sclerosis seem, however, to be as frequent in private as in hospital patients. Though we would on general principles expect that private patients would not show so many complications as those in an almshouse hospital yet the duration of life, and this depends largely on the complications, seems but little if any longer in the former than in the latter. This may be explained on the ground that the patients who end their days in a hospital are those whose inherent resistance to disease, their natural immunity, is so strong that it takes much to kill them.

The necropsy findings do not throw much light on the primary cause or causes of tabes but it is interesting that in this series of cases, as in most other studies, no lesions of syphilis were found, neither recent gummata nor old syphilitic scars. On the other hand I believe that it is still true that chronic myocarditis, chronic nephritis and arterial sclerosis may have syphilis as a great predisposing cause. I have not taken any account of the statements in the histories as to the presence of syphilis, because the patients were so largely of the class entirely unable on account of mental poverty to give an accurate account of their past medical history that their statements are valueless. I have no doubt however that at least eighty per cent. of them had syphilis at some time. Many died before it became a routine matter to have the Wassermann reaction made so that in this series we have not the knowledge gained from it.

Chronic myocarditis, valvular heart disease, and chronic nephritis are noted more frequently in the autopsy records than any other pathological processes. Atheroma of the aorta is specifically mentioned nine times. Aneurism of the aorta was present in three cases but was not the cause of death in any. It caused some erosion of the lumbar vertebræ in one case in which the aneurism was abdominal. Pulmonary tuberculosis caused death in six cases and acute croupous pneumonia in five. Three of the patients suffered from cerebral thrombosis causing hemiplegia, but all lived for some time after the stroke and none died from it. Two died from septicemia from bedsores. One had

carcinoma of the pylorus, which during life gave no symptoms, and another carcinoma of the cervix. One died from a suppurative prostatitis. In eight the immediate cause of death seemed to be pulmonary edema.

I should explain that I noted phthisis only when active lesions were present. I made no note of the occurrence of little healed patches, or at least the lesions commonly regarded as such, found so commonly at the apices of the lungs in all adults. They are so frequent in all conditions as to signify nothing. In a few cases, *e. g.*, one of phthisis, I accepted the clinical evidence in the absence of necropsies as proof of the presence of pathological lesions. The most striking thing is the frequency of chronic myocarditis, chronic nephritis, valvular heart disease and general arterial sclerosis. The last is much more frequent than appears from the figures because it was only noted when quite severe. Indeed general arterial fibrosis may be regarded as part of the morbid anatomy of tabes. The other lesions found are accidental or consequential. Pathological changes in some of the organs were directly due to the tabes; for example cystitis is given an opportunity to develop by the difficulty in micturition and changes in the muscles of the bladder are surely sometimes trophic.

It is impossible to find out with any accuracy the duration of tabes, after the onset of symptoms, when dealing with hospital patients. It is rare for them to be of a high enough mental grade to give an accurate statement of when their illness began or how it progressed. The figures given therefore are of no value save to show that death may come, from some complication, very early in the course of the disease or may be delayed for many years. It would be entirely erroneous to draw the conclusion that simply because a patient dies after having tabes for only a few months therefore the disease has run its course. This is shown in the man who lived only six months. His tabes was not far advanced but it was grafted on to a far advanced phthisis which killed. On the other hand the old woman who lived twenty-four years with the disease and then died of arterial sclerosis shows how slow its progress may be. As a matter of fact there is no definite time limit for the life of a tabetic. It may be long or relatively short, only a few years, and the disease does not progress with even steps but now runs, now stands still,

and now creeps. It seems almost as if every now and again the disease process were rekindled rather than that the fire burns all the time. Below is a summary of the cases:

CASE 1.—Male. Died at 51 years. Alleged duration, five years. The immediate cause of death was chronic myocarditis. The necropsy showed chronic myocarditis, emphysema, congestion and edema of lungs, slight atheroma of aorta, marked sclerosis of pulmonary and coronary arteries, chronic diffuse nephritis, and the urinary bladder greatly distended with well marked ribbing and normal mucosa.

CASE 2.—Male. Died at 54 years. Alleged duration, six years. Immediate cause of death, chronic myocarditis. The necropsy showed chronic myocarditis, emphysema of lungs, chronic cystitis, pyelonephritis, chronic splenitis, atheroma of aorta, aortic valves slightly sclerosed and the urinary bladder small with walls twice the normal thickness and the mucous membrane hemorrhagic in spots.

CASE 3.—Male. Died at 48 years. Alleged duration, five years. Immediate cause of death, pulmonary tuberculosis. (No necropsy.)

CASE 4.—Male. Died at 37 years. Alleged duration, about six months. Immediate cause of death, pulmonary tuberculosis. (No necropsy.) He was far advanced in tuberculosis at the time of his admission to the hospital. The phthisis antedated the tabes.

CASE 5.—Male. Died at 56 years. Alleged duration, eleven years. A few weeks before death complete rectal and urinary incontinence came on and later bedsores developed on the buttocks and one heel. He died from sepsis from the bed sores. (No necropsy.)

CASE 6.—Male. Died at 47 years. Duration, thirteen years. Immediate cause of death, myocarditis. The necropsy showed chronic myocarditis, marked chronic nephritis and a small carcinoma of the pylorus.

CASE 7.—Male. Died at 51 years. Duration, sixteen years. Immediate cause of death, uremia. (No necropsy.)

CASE 8.—Male. Alleged duration, eleven years. Immediate cause of death, pulmonary tuberculosis. (No necropsy.)

CASE 9.—Male. Died at 67 years. Alleged duration, four years. Necropsy showed chronic myocarditis, aneurism of the arch of the aorta, aortic valvular disease, chronic diffuse nephritis. The bladder was normal.

CASE 10.—Male. Died at 53 years. Alleged duration, ten years. Immediate cause of death, myocarditis. Necropsy showed emphysema of lungs, heart hypertrophied and dilated, chronic nephritis, general arterial sclerosis, mitral and aortic val-

vular disease, coronary arteries sclerosed. The bladder walls were thick.

CASE 11.—Male. Died at 37 years. Duration, three years. Clear history of syphilis at 25 years. Six months before death he had a right-sided hemiplegia without unconsciousness or aphasia. This improved. He lost control of bladder a few months before death. Developed a cystitis. Later probably a pyelonephritis. No necropsy but clinically the immediate cause of death was uremia.

CASE 12.—Male. Died at 59 years. Alleged duration, nine years. Immediate cause of death, uremia. Necropsy showed general arterial sclerosis especially marked in the aorta, aortic and mitral valvular disease, emphysema and edema of lungs, dilated ureters, chronic cystitis, chronic nephritis and many bedsores.

CASE 13.—Male. Died at 53 years. Alleged duration, eight years. Immediate cause of death, pulmonary tuberculosis. No necropsy.

CASE 14.—Male. Died at 47 years. Alleged duration, seven years. Immediate cause of death, acute dilatation of heart. No necropsy.

CASE 15.—Female. Died at 68 years. Alleged duration, twenty-four years. Immediate cause of death, myocarditis. Necropsy showed myocarditis, mitral and aortic valvular disease, chronic atrophic gastritis, chronic fibrous splenitis, chronic nephritis and hemorrhagic purulent endometritis. The aorta was extremely atheromatous. Though the cause of death is given as myocarditis it could be put down to the universal arterial sclerosis. The bladder was contracted and showed many well-marked submucous varices.

CASE 16.—Male. Died at 55 years. Alleged duration, eighteen years. During the last three years of life he had eight or nine epileptiform convulsions. He died in uremic convulsions. The urine for some months before the last fit and at the time of his fatal illness contained hyaline and granular casts, some red and white blood corpuscles and quite large amounts of albumin. The necropsy showed congestion and edema of the lungs, chronic myocarditis, chronic aortic and mitral disease, chronic and acute nephritis, chronic leptomeningitis, coronary arteries markedly sclerosed, the pulmonary and aortic valves slightly sclerosed, aorta quite atheromatous. The bladder was dilated with mucosa normal.

CASE 17.—Male. Died at 51 years. Alleged duration, five years. Eleven days before death he had an apoplexy followed by palsy of the right arm and later of the leg. Delirium and fever developed followed by coma and death. Necropsy showed chronic myocarditis, aortic and mitral disease, acute and chronic nephritis, bilateral hydronephrosis, bladder dilated and chron-

ically inflamed, softening in the region of the right mid-cerebral artery, marked sclerosis of the pulmonary and coronary arteries and the aorta. The bladder was distended but the mucous membrane was normal on macroscopic examination.

CASE 18.—Male.—Died at 62 years. Alleged duration, four years. Immediate cause of death, general arterial sclerosis. No necropsy.

CASE 19.—Male. Died at 69 years. Alleged duration, eight years. About one year before death he had a left hemiplegia. There was chronic myocarditis, purulent cystitis, suppurative prostatitis and edema of lungs.

CASE 20.—Male. Died at 53 years. Duration unknown. Immediate cause of death, heart disease. Necropsy showed aortic valvular disease, hemorrhagic infarct left lung, chronic nephritis.

CASE 21.—Male. Died at 53 years. Duration, fourteen years. Immediate cause of death, edema of lungs. Necropsy showed edema of lungs, brown atrophy of heart, chronic cystitis, coronary arteries thickened, aortic and mitral valves slightly thickened, aorta sclerosed. The bladder walls were thick and mucous membrane ulcerated.

CASE 22.—Female. Died at 51 years. Alleged duration, four years. Immediate cause of death, edema of lungs and myocarditis. No necropsy.

CASE 23.—Male. Died at 71 years. Alleged duration, four years. He also had tuberculosis of the lungs and it was the immediate cause of death. There was no necropsy. It must be very rare for tabes to begin at 67. He was, however, very positive in his statement and very close questioning did not shake him. At first I thought he had a diffuse myelitis from the arterial sclerosis but I am sure it was really a genuine case of tabes beginning late in life.

CASE 24.—Female. Died at 53 years. Alleged duration, ten years. Immediate cause of death, chronic Bright's disease. Necropsy showed chronic Bright's disease, cystititis, carcinoma of the cervix, bronchopneumonia, mitral and aortic disease, myocarditis, aorta sclerosed. The bladder was ribbed.

CASE 25.—Male. Died at 56 years. Duration, three years. Death from gangrene of the scrotum. No necropsy.

CASE 26.—Male. Died at 63 years. Duration, thirteen years. Died from croupous pneumonia. Necropsy showed myocarditis, atheroma of aorta marked, chronic cystitis, chronic nephritis.

CASE 27.—Female. Died at 48 years. Alleged duration, four years. Immediate cause of death, chronic myocarditis. Necropsy showed ulcerative colitis, chronic cystitis.

CASE 28.—Male. Died at 50 years. Alleged duration, three years. Immediate cause of death, edema of lungs. No necropsy.

CASE 29.—Male. Negro. Died at 55 years. Alleged dura-

tion, nine years. Immediate cause of death, croupous pneumonia. No necropsy.

CASE 30.—Female. Died at 64 years. Duration, six years. Immediate cause of death, croupous pneumonia. He had aortic aneurism. No necropsy.

CASE 31.—Male. Died at 44 years. Duration, seven years. Died from croupous pneumonia. Necropsy also showed aortic valvular disease, chronic cystitis, pyelonephritis, coronary arteries sclerosed, mitral and aortic disease, aorta sclerosed. The bladder walls were thick and the mucous membrane inflamed.

CASE 32.—Male. Died at 44 years. Duration, three years. Immediate cause of death, croupous pneumonia.

CASE 33.—Male. Died at 40 years. Alleged duration, eight years. Immediate cause of death, valvular heart disease. The necropsy showed mitral disease with dilatation, chronic nephritis, chronic phthisis, abdominal aneurism, tuberculous ulcers of the intestines. Last two lumbar vertebræ eroded. Bladder chronically inflamed.

CASE 34.—Male. Died at 54 years. Duration, two years. Immediate cause of death, chronic myocarditis and edema of lungs.

THE AMYOTROPHY OF LEAD POISONING WITH INCREASED REFLEXES

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(*From the Laboratory of Neuropathology of the University of Pennsylvania*)

According to the statistics of Tanquerel des Planches which have been so often quoted, out of 2,151 cases of lead poisoning observed by him, 107 suffered from paralysis. It has been proven by microscopical examinations that this paralysis is dependent upon a form of motor neuritis which is peculiar in that certain nerves are particularly affected and others entirely escape, therefore Remak has designated it as an elective systematic neuritis or polyneuritis. There are atypical cases, however, which in addition present signs indicative of spinal involvement. In 1887 Putnam described a number of clinical cases of lead poisoning associated with increased reflexes and weakness of the extremities, and more recently S. A. K. Wilson reported four cases in which there was progressive muscular wasting together with increased tendon reflexes, presenting therefore a picture not unlike amyotrophic lateral sclerosis. Cases of this kind are exceedingly rare and their very existence has even been questioned, as satisfactory pathological examinations have not been made. According to Spiller who has reviewed the literature upon this subject, the only investigators who have found changes in the spinal cord of man in lead poisoning, are Vulpian, Oppenheim, von Monakow, Oeller, Zunker, Goldflam, Carlo Ceni, Laslett and Warrington, F. Quensel, Phillipe and Gothard, and Madame Dejerine-Klumpke. To these should be added two cases described by Spiller himself and also one by Mott.

At a meeting of the Philadelphia Neurological Society in December, 1909, Dr. J. K. Mitchell exhibited a patient presenting

the clinical picture of amyotrophic lateral sclerosis with bulbar symptoms, which had followed prolonged lead intoxication. Two months later the patient died; the spinal cord was immediately placed in ten per cent. formalin and after three days was removed to a solution of Müller's fluid so that the Marchi method could be used. Blocks were cut and imbedded in colloidin by the usual method. Unfortunately the brain and peripheral nerves could not be obtained.

F. W. W., white, male, 53 years old, painter by occupation, was admitted to the wards of the Orthopedic Hospital and Infirmary for Nervous Diseases in the service of Dr. Mitchell, complaining of difficulty in using his hands and in walking. The patient's family history was negative. Syphilis and alcohol were denied. He had had several severe attacks of lead colic from which he recovered, and had remained well until 1906 when he had another severe attack of colic lasting about eight weeks. During this attack he did not have wrist drop, but there was very severe general muscular weakness from which he never fully recovered. About a year later he began to complain of stiffness and soreness of all four limbs with occasional cramp-like pain in the forearms and calf muscles, and increasing weakness. Some months later his speech became indistinct and there was difficulty in swallowing liquids. This condition gradually increased until admission to the hospital.

Physical Examination.—Pupils equal and react normally to light, accommodation and convergence. Ocular movements are good in all directions. The masseter and facial muscles contract equally and promptly on both sides. Tongue is not atrophied, but shows distinct fibrillary tremor and cannot be protruded beyond the teeth, nor can it be elevated or moved laterally. Swallowing is difficult and speech is very indistinct and nasal in tone. There is no atrophy of the muscles of the face or neck.

All the muscles of both upper extremities, including the shoulder girdle, show very marked wasting with corresponding weakness. The extensors of the wrist on each side are more affected than the flexors and there is incomplete double wrist drop. The supinator longus of each side has not entirely escaped but seems stronger than the extensors of the hands. The thenar and hypothenar and interossei muscles of each hand are much wasted. The triceps and biceps reflexes are equal and increased on each side. There are marked fibrillary contractions of the muscles of the upper arm on both sides. The muscles of the thorax and abdomen seem normal.

Both lower extremities are very weak and there is double foot drop. Gait is steady but toes are not lifted well from the ground.

Station is normal. There is no spasticity. All the muscles of both legs below the knee are atrophied. The tibialis anticus on each side is possibly more affected than the others. Fibrillary contractions are marked in both thighs. The knee jerks and Achilles reflexes are equal but exaggerated. There is no Babinski and no ankle clonus on either side. Sensation for touch, pain, heat and cold is everywhere entirely normal. The sphincters are normal. There is no tenderness over any of the nerve trunks and no trophic changes of the skin, hair or nails.

Dr. Langdon reports that the palpebral fissures are normal; motions are equal in all directions with slight nystagmoid movements, especially to the right where motion is rotary. There is some loss of disc capillarity. Corrected vision normal and fields are full.

Electrical examination gives an equal response to the negative and positive currents below the knees, and in all the arm muscles except the extensors of the right hand. Here the response is less to the faradic than to the galvanic current, but there is no reversal. In the extensors of the right hand the response is nearly gone to both currents; still no reversal. Face and trunk muscles give normal response.

Microscopic sections of the spinal cord stained by the hemalum and fuchsin method show that the membranes are normal, occasionally a few small round cells are found about the pial vessels. In the lateral columns there is an increase of neuroglia tissue. The blood vessels of the gray and white matter are for the most part normal, though a few show slight thickening of their walls. With the Weigert method there is a very mild degeneration in the lateral columns. This degeneration can be traced on both sides from the upper cervical region all the way down to the lower lumbar cord. It is very mild, at first indistinct, and gradually increases, becoming most pronounced in the lumbar swelling, though even here it is not severe. In the lumbar segments only, there are a few degenerated fibers found in the posterior columns close to the posterior longitudinal septum. In the cervical region the degenerated areas do not exactly correspond to the position of the pyramidal tracts, but are somewhat more diffuse. Laterally they do not extend quite to the periphery; in the thoracic region they have become broader, reaching the periphery of the cord while in the lumbar swelling they extend posteriorly nearly as far as the exit of the posterior roots and not so far laterally. It seems as if the fibres in close proximity to some of the smaller blood vessels were usually more diseased than in other locations; this however is indefinite and not at all certain.

In the gray matter the medullated fibers do not present a varicose appearance though they are possibly less numerous than normal. By the Marchi method the degenerated fibers do not stain black, and nowhere can degeneration be recognized.

By the Nissl method the ganglion cells are decreased in number and most of those remaining are diseased, yet an occasional normal cell can be found. The majority are much distorted and smaller than normal. Some have assumed an elongated or twisted appearance, the nuclei of many are displaced and the chromophilic elements are destroyed immediately about the nucleus. The pigment is increased. The dendritic processes are imperfect or destroyed, the chromophilic granules appear finer than normal. There does not seem to be any relationship between the severity of the disease in the anterior horn as compared with the degeneration of the lateral columns.

Unfortunately this case was not seen until the disease was far advanced, so that the exact mode of onset is somewhat uncertain; however the patient, a painter by trade, after repeated severe attacks of lead colic and prolonged exposure to lead developed severe atrophy with corresponding weakness of the muscle of all four extremities; associated with muscular pain and increased tendon reflexes. As the disease advanced there were signs of bulbar involvement. The extensor muscles of the forearms were most severely affected although wrist drop was not complete. Microscopic examination of the spinal cord revealed severe disease of the anterior horn cells and degeneration of the lateral columns. The character of the alterations of the nerve cells was entirely different from that usually found secondary to inflammation of the peripheral nerves in cases of toxic neuritis. The appearance commonly spoken of as "reaction à distance" was not present, but the atrophic type of nerve cell with perinuclear chromatolysis so often found in primary disease of the spinal cord was present.

The severity of the disease in the anterior horns did not bear any definite relationship to the intensity of the degeneration found in the lateral columns and it was not possible to determine which was primarily affected; unlike amyotrophic lateral sclerosis the lumbar region was more severely diseased than any other portions of the cord. On account of the fact that the majority of fibers within the degenerated areas were exceedingly delicate and the Marchi method having shown no indication of degeneration of the myelin sheaths, it can be inferred that there had been an exceedingly chronic atrophic process and that it was not progressive or very slowly progressive, therefore it does not seem unreasonable to suppose that if lead can cause a segmental periaxial

degeneration of a peripheral motor neurone as was shown by Gomboult, that a similar condition might be brought about within the spinal cord. On the other hand evidence has been brought forward which proves conclusively that various cells may undergo multiplication when stimulated by chemical substances. Ross has recently shown this to be true of the white blood corpuscles of the peripheral circulation. Moreover in a former study I have been able to demonstrate that lead can cause an abnormal multiplication of certain cells of the bone marrow and that evidence of such abnormality can be demonstrated during life. Is it not conceivable therefore that lead may induce a similar proliferation of neuroglia cells within the spinal cord and that this multiplication in turn might destroy by pressure the medullated fibers in the lateral columns, thus producing a primary sclerosis with secondary atrophy and degeneration of fibers?

From both the clinical and pathological point of view this case can justly be considered one of amyotrophic lateral sclerosis, particularly the amyotrophic type described by Raymond and Cestin in which spasticity is slight or entirely lacking.

Two of Wilson's cases of chronic lead poisoning presented almost an identical picture indicating that the central motor neurones were probably affected. In Goldflam's case of lead poisoning the lateral columns were degenerated, but in all the other reports referred to here the lateral white columns of the spinal cord escaped. We know nothing in regard to the exact etiology of amyotrophic lateral sclerosis; still it is generally considered to be an abiotrophy. This case and Wilson's cases seem to warrant the opinion that the ingestion of lead may hasten the development of a true amyotrophic lateral sclerosis in a person already predisposed or may cause a symptom complex which can not be differentiated from it.

CASE II. A white male, 50 years old, worked in lead factory for past twenty-five years. Denies syphilis and uses alcohol moderately. One and a half years ago he noticed numbness and stiffness of fingers and some weakness. In six months both hands became affected to such a marked degree that he was forced to give up work. At this time he noticed that his hands began to look thin. During the next few months the muscles of the palms of his hands began to atrophy and there was great difficulty in tying his shoe laces and buttoning his clothes. This condition gradually increased till there was total bilateral wrist drop. Lately both legs have been growing weak.

Physical Examination.—Pupils react normally to light and accommodation. There is no evidence of cranial nerve involvement. There is a distinct blue line on the gums. Musculature of both arms shows decided atrophy, especially in the hands and extensor surfaces of the forearms. The right arm is atrophied much more than the left about the shoulder and scapular region and to a less extent in the region of the triceps and biceps muscles. The musculature is very soft and flabby and hangs loosely when the arms are raised from the bed, especially in the region of the triceps muscle. The wrists both show double wrist drop and he has little or no power over the wrist. There is decided atrophy of the small muscles of the thenar and hypothenar eminences. The interosseous and lumbrical muscles of the hands are equally atrophied. On the extensor surface of the forearm all the extensors are atrophied to some extent and about equally so in either forearm. The supinator longus shows marked atrophy in each arm. The right arm is atrophied to slight extent in the triceps and to a more decided degree in the biceps and deltoid muscles. The left arm shows no such wasting about the shoulder. The middle of the forearm on left measures 9 inches, right side 8½ inches. Left forearm 9½ inches, right 9 inches. About shoulder, right 15½ inches, left 16½ inches. There is no spasticity of the arms or forearms. The wrist is somewhat stiff. The fingers are all flexed at the metacarpo-phalangeal and phalangeal joints, but can be easily extended, going back into flexion the moment they are let go. Against resistance, he has a good deal of power in the arms and forearms of either side. At the wrist the power of extension is greatly impaired and he is especially weak in supination. Both arms are about equal in this respect. The grip of either side is decidedly diminished but to a greater extent on the right side than the left. The patient is right handed. Biceps reflex is diminished on the right but normal on the left. Triceps exaggerated on both sides.

In the legs the musculature is fair though soft. No atrophy, no spasticity. He can perform all active movements and fairly well against resistance in either leg. Patellar reflex is normal on right side and prompt and exaggerated on left side. Achilles normal on either side. No patellar or ankle clonus. No Babinski. Sphincters normal. Finally the patient had an apoplectic attack and died two days afterwards.

Diagnosis.—Chronic lead poisoning.

Microscopical examination of the paracentral lobules showed slight thickening of the pia with moderate proliferation of endothelial cells, and congestion of the blood vessels. There were a few small hemorrhages between the pia and the cortex. The neuroglia of the cortex was slightly increased. The Betz cells when stained by the Nissl method showed a marked chromatolysis. Sometimes the nuclei were peripherally placed and there was

disintegration of the chromophilic granules. In other parts of the brain and brain stem nothing was found except moderate arteriosclerosis with a large recent hemorrhage in the right basal ganglia. The spinal cord was not obtained for examination.

The alterations found in the cerebral cortex in this case were very similar to those seen by Spiller, Quensel, and Mott in cases of plumbism. After poisoning dogs with acetate of lead McCarthy found very decided alterations in the cells of the motor cortex as well as some degree of thickening of the capillary vessels and minute hemorrhages. Except for the general picture of encephalopathy patients suffering from chronic lead palsy do not exhibit clinical signs of central motor neurone disease, yet this patient did present exaggeration of reflexes which might be considered as indicative of cerebral involvement. In Case I exaggeration of the tendon reflexes was very striking and can readily be explained by degeneration of the lateral columns of the spinal cord, but unfortunately in the second case the condition of the cord was not known, neither could the peripheral nerves be obtained for examination, nevertheless the presence of a peripheral neuritis in Case II could hardly be questioned even without microscopical examination.

The preservation or exaggeration of reflexes associated with peripheral neuritis is quite naturally looked upon by some with scepticism; reliable proof of such an occurrence is sadly lacking; still it has been described clinically by DeBuck and others. Cassirer seems to believe that there are exceptional cases of neuritis with preserved and even exaggerated reflexes and refers to Moebius, Strümpell, Sternberg and Dejerine who are of the opinion that irritation of the sensory fibers of mixed nerves in the early stages of a true neuritis can cause exaggeration of tendon reflexes. Goadby and Goodbody, in experimenting on rabbits poisoned by acetate and carbonate of lead, observed that paralysis generally occurred in the hind legs, and that the knee reflexes were at first increased but later became sluggish; however, they also found small hemorrhages in the spinal cord.

The lesions which have been found in the brain of cases of plumbism have never been very pronounced, yet a certain degree of endothelial proliferation of the pia, small hemorrhages and chromatolysis of the Betz cells with proliferation of the neuroglia have been fairly constant.

Spielmeyer has described a type of cerebral hemiplegia with increased tendon reflexes in which the pyramidal tracts were not degenerated but the cells of the motor cortex were diseased. He has called this "Intrakortikale" hemiplegia. In Case I the mild degeneration of the pyramidal tracts may possibly have followed chromatolysis of the cortical cells of Betz, and in Case II the evident alterations in these cells may have been sufficient to cause increased reflexes, being analogous therefore to a milder type of Spielmayer's "Intrakortikale" paralysis, even though peripheral motor neuritis was present. In the second case lead was probably a contributory cause of a certain degree of arteriosclerosis which resulted in an apoplexy and death.

In conclusion I wish to express my thanks to Dr. Spiller, who very kindly allowed me to study the material of the second case.

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MENTAL SYMPTOMS OF ACUTE CHOREA[1]

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Chorea is distinctly a disease of the brain. The position taken by neurologists at the middle of the nineteenth century, notably by Romberg and Steiner, that it was a disease of the spinal cord, was questioned within a few years (1868–1874) by such men as Golgi, Russell, Maynert, Broadbent and others, who maintained that it was a disease of the brain. In turns its focus was located in the optic thalamus and corpus striatum, the cortex, the motor cortex and later the disease was regarded as a nutritive disturbance of the brain, in which the nerves of the cortex and central ganglia were involved. Later still it came to be considered especially in its acute form as an acute infectious disease, but it remained for Moebius and Jolly to distinguish clearly between acute or Sydenham's chorea and the hereditary or Huntington's chorea. It was, however, Jolly who formulated the still prevailing classification of chorea.

Chorea is characterized by both mental and physical or motor symptoms. The mental symptoms of chorea have been noted since the early descriptions of the disease, though it is worthy of comment that Sydenham, to whom we are indebted for the first accurate description of chorea, did not refer to mental symptoms. In chorea it may be said that the majority of cases present only slight mental symptoms. Marcé as early as 1860 remarks that two thirds of his cases presented mental symptoms. Brower in 1900 cites an identical proportion. Arndt claimed that there was no chorea without accompanying mental symptoms, a position also maintained by Emminghaus and Ball. Russell recorded mental symptoms in 38 cases of his 99 cases, and Koch observed mental symptoms in 110 of his 267 cases.

The generally accepted classification of the mental symptoms

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is that of (*a*) the mild mental symptoms and (*b*) the psychoses. The mild cases are characterized by symptoms involving chiefly the emotional field, while the severe cases consist chiefly of delirious states leading to stuporous or paranoid conditions, but sometimes of stuporous conditions throughout.

(*a*) Mild Mental Cases

This group of cases represents by far the largest number of acute choreas with mental symptoms.

These patients sometimes antedating the appearance of the choreic movements, but most often only after the choreic movements are well established, show a markedly increased emotional irritability. They become fretful, peevish, fault finding, and change rapidly and without provocation from one mood to another. Hence especially the young patients are hard to please and difficult to manage. They want to get out of bed, tire of restraint, at one moment want some one to read aloud, and at another they wish to be left alone. These emotional changes may even lead to passionate outbreaks, when they burst into tears, tear up their books and break playthings.

Accompanying these emotional changes, not infrequently and especially at the height of the disease there is difficulty of attention. This may be noted in conversation as when questions are asked, and especially when intelligence tests are applied. The attention cannot be well fixed, the recital of the calculation is frequently halted or abruptly stopped, very much as when a child is fatigued. And it requires frequent urging to get them to read aloud. Otherwise the intellectual field is not involved; that is, the memory is unimpaired, and the train of thought coherent, and there are no hallucinations or delusions. It should be added, however, that these patients not infrequently suffer from night terrors and dreams, and are easily frightened.

The occasional cases in which the mental symptoms antedate the development of choreic movements are usually school children whose teachers observe a gradually increasing lack of mental alertness. The pupil does not follow the work, seems dull and cannot read as well and at the same time shows a certain irritability and brusqueness, especially when prodded in his work. This condition may exist even a week or two before the choreic movements develop. These symptoms usually subside synchro-

nously with the choreic movements, but evidences of increased emotional irritability and faulty attention are apt to persist many weeks after all signs of choreic movements have vanished. The increased irritability becomes evident particularly upon fatigue and attempts at school work reveal the impaired attention even when patients seem perfectly well.

This group of cases is well represented by the following case.

A school girl, 13, whose brother died at 4 of a "spastic paraplegia" following whooping cough and measles. She, herself an excessively nervous child, was of the motor type, always playing, studying and working hard. Thanksgiving she had an attack of grippe and Christmas tonsillitis, both of which were followed by unusual malaise, and on the first of February she developed choreic movements in the left foot, accompanied by much pain. The movements increased rapidly and became general. From the onset of the choreic movements she became increasingly irritable and peevish. She insisted upon constant attendance, cried and whimpered much and was very unhappy. She wanted her mother with her constantly, but yet would complain when her mother left the room on errands for herself, and would turn her face to the wall in a surly morose manner. She would call for picture papers and then hurl them on the floor. She was especially disturbed at night with frightful dreams and night terrors. She would awake from her sleep with a sudden start, crying, "Mother! I smell smoke. The house is on fire," or "Quick mother, there is some one trying to get in at the window," or "Oh! mother, I am so glad you are here, I thought I was being chased by Indians." Her changing mood was seen in her conduct toward her father, whom she would often greet pleasantly but in a few moments would turn on him ordering him from the room because he irritated her so. Her difficulty of attention was best shown by her inability to follow a conversation. Both the physical and mental symptoms reached their height in the beginning of the third week, at which time she had one general convulsion and was several times thrown to the floor by her choreic movements. She was improving by the fourth week and by the end of the fifth week, choreic movements had mostly disappeared. Mentally, the night terrors, intense irritability and marked difficulty of attention vanished with her movements. The ready change of mood and some irri-

tability, however, persisted for some weeks. Indeed, even six months later when she attempted to return to school she fatigued quickly and at such times showed considerable irritability.

The course of the disease in this group is one of gradual development to the height of the choreic movements and then a gradual decline. Usually the intensity of the mental symptoms corresponds to the intensity and extent of the somatic symptoms. This relationship, however, by no means always obtains. The mental symptoms not infrequently are the first to appear and the last to vanish. In some cases these mild mental symptoms predominate and give the prominent coloring to the picture throughout, so much so that the case appears to be one of a simple mild psychosis complicated by acute chorea.

The prognosis in this group is invariably good, except in the few instances where this mental picture is but a premonitory state of the psychoses to be next described.

(*b*) Choreic Psychoses (Chorea Insaniens)

These psychoses are of such infrequent occurrence as to render them a rarity. Viedenz in 3,073 cases in his institution records but 5 cases. Kirby reports only one in 1,200 patients. In my own experience in the Connecticut Hospital for the Insane in over 5,000 I encountered not over 3 cases, while there were 12 cases of Huntington's chorea. In my practise in the past year, however, I have encountered 4 cases, which experience has been the incentive for collating the facts presented in this paper.

The predominating type of the choreic psychosis is that of a delirium and as such has been classified as a form of toxic or infection psychosis. Consciousness becomes clouded, hallucinations and delusions are present, together with an increased emotional irritability and a dreamy confusion of thought. Single impressions are usually fairly well apprehended, but in spite of this the patients continue disoriented, inattentive and distractible. Though they hear false voices, see strange visions and express persecutory and fearful delusions, they cannot express themselves clearly and the delusions never become elaborated. The content of thought as expressed usually consists of disjointed sentences into which are woven incidental observations. The emotional attitude varies; at times the patients are elated and cheerful and

at others fearful and anxious, while outbursts of passions are not infrequent.

This type of psychosis is well represented by the following case.

A housewife, 24 years of age with a neurotic personal history, in the form of several "hysterical" episodes. Five days following the onset of left hemichorea of considerable intensity with increasing irritability and restlessness, she suddenly developed hallucinations of hearing and sight, and great fear. She became suspicious of her home environment and threatening. Speech was jerky and abrupt and the content of thought wandered from one thing to another. Her extreme agitation was seen in her attempts to flee from the bed and room. Emotionally, she exhibited almost constant fear, including fear of burning. Consciousness was clouded, still she could apprehend individual impressions fairly well; such as recognizing her husband, when sharply asked who he was. Her activity was not constant, as at times she would lie quietly looking up at one with a distracted helpless expression like one thoroughly fatigued. These periods of quiet never lasted more than one half to one hour. During this period of delirium she ran a subfebrile temperature.

This mental state subsided gradually with the lessening of the movements after a total duration of not more than eight days, and by the end of the fourth week the patient was able to resume her household duties and appeared quite well except for her excessive irritability.

These delirious states, particularly when accompanied by pyrexia with symptoms of endocarditis and polyarthritis, sometimes pass over into stuporous states, which here most often represent a terminal condition. Wollenberg, however, reports one such case in which the patient emerged after several weeks and finally recovered.

Sometimes the mental picture is not one of delirium at the onset of the mental symptoms, but may be represented by the picture indicated in the preceding group which is later replaced by the delirious state. Again the picture at the outset may be rather one of a definite mental depression. This is well represented by the following case.

A school teacher, 18 years of age, with good family and normal

personal history. For a few weeks preceding the gradual development of left hemichorea the patient suffered from malaise and anorexia, and for a few days antedating the onset, she was definitely depressed and brooding. During the first four weeks while the movements increased gradually, the mental depression became more prominent and was accompanied by delusions of self accusations. In the fifth week while the movements were still confined to the left side consciousness became slightly clouded, fearful hallucinations of sight and hearing developed, accompanied by considerable fear, when she would cry out, "Don't burn me alive." Her train of thought was considerably impaired, and attention could not be fixed. Sentences when begun were never finished and often broken off abruptly. At this time subfebrile temperature developed and lasted about a week, during which time consciousness became markedly clouded, hallucinations more numerous and fearful and the train of thought very difficult, due to constant interruptions; delusions were transitory, both of self depreciation and aggrandizement; at one time thought herself married and looked about her bed for the wedding ring, and again shrunk from the environment because of fear of personal injury. Likewise the mood changed abruptly from elation to depression, at times crying and again laughing and gleefully clapping her hands. The restlessness was fairly constant and included obstinate resistance to what was required of her, especially getting out and in bed and bath and taking nourishment. There was also frequent passage of urine and feces in the bed and bath. At times when silent she would draw her fingers through her hair or push against or pull at the side of the tub or bed in a thoroughly distracted manner. At the height of her illness during this week the choreic movements became general and were quite pronounced and were accompanied by frequent gritting of the teeth. In the seventh week the movements subsided almost wholly except for the gritting of the teeth and there were brief remissions when she would ask for food and seem to note questions asked, but for the most part the mental symptoms remained unchanged until the ninth week, when consciousness became clearer for longer periods each day and the hallucinations vanished and thought became more coherent and steady, so that questions could be answered. She, however, remained suspicious and obstinate in refusing to con-

form to requests. When asked if she would go out of doors wanted to go in, and to go in the house she insisted on going out. The delusions of suspicion and her obstinacy disappeared in the eleventh week, when she complained that everything appeared so changed and strange to her, the home, the family, the trees, water, etc., everything was so small. But throughout this period of convalescence for one month longer there existed great irritability, and it was not until the fifth month that all signs of irritability vanished.

Again it should be noted that in a few of these infectious deliria cases, especially those which run a prolonged course, the more pronounced symptoms such as hallucinations, clouding of consciousness and confusion of thought, and delusions accompanied by prominent emotions, gradually subside, but the patients develop a sort of paranoid condition in which a few hallucinations persist upon which are built up certain persecutory delusions.

The second group of psychoses; namely, the stuporous states, are less frequently encountered. These stuporous states indicate a more grave condition, are more apt to accompany chorea complicated with endocarditis or polyarthritis. The following case represents this group.

A girl 20 years of age, whose father was neurotic, and whose maternal aunt died of acute chorea at 25 years, after a duration of about two weeks. At 18 years of age, after hard mental work in preparing for examinations, showed marked choreic symptoms for one night only. Two months before present attack became a little nervous after a prolonged vigil during her own convalescence from scarlet fever. Thence continued somewhat irritable. The onset of the choreic movements was gradual during this state of increased irritability, involving at first the face and eyelids. Four days later, while witnessing a severe quarrel between her brothers, she fainted. At once the movements became extreme, involving also the right side, and becoming general. She developed a temperature varying from 100°–103°. By the tenth day the movements were so extreme as to throw her out of bed and the temperature rose to 105°. Coincident with this high temperature, she became stuporous. Her speech was so much involved as to render responses to questions impossible. Her conduct, however, did not indicate the presence of hallucinations or delusions, and there

was no evident pronounced emotional state, either of depression or elation. Some impressions were possibly apprehended, as she would momentarily look at one when addressed and make an effort to respond. This slight evidence of intelligence soon vanished as the stupor deepened on the eleventh day. Hyperpyrexia continued and for four hours preceding death on the twelfth day reached 108°. The movements diminished perceptibly during the last day. Endocarditis was evident from the ninth day.

Two such cases have been described by Burr, in one death occurred from septicemia after a duration of one month; also one case by Wollenberg with recovery, though the mental symptoms persisted for many weeks following the disappearance of the movements. These cases in which stuporous states develop at the onset and prevail throughout are not to be confounded with the stuporous states which develop as a terminal state in the deliria cited above. Because of the gravity of the case and the complications, the course is short and most often terminates fatally.

These two groups, I believe, comprehend all the forms of psychosis accompanying acute chorea. Many of the older writers refer to maniacal symptoms, melancholic symptoms, acute confusional attacks, etc., but when the symptoms of such cases as they report fully are carefully studied, it is found that they are as readily classified in our present day group of infection delirium, as already described.

There is, however, a certain group of choreic cases with mental symptoms that deserve particular attention. I refer to cases suffering from an already established definite psychosis, complicated by choreic symptoms. Here would be included such cases as Burr regards as the chorea of degenerates in which there is a tendency to dementia. Some of these are clearly cases of dementia præcox. Certainly one of Burr's cases appears to be such. One of Wollenberg's cases seems to be a toxic delirium following ingestion of heroic doses of the salicylates for peri- and endocarditis which fourteen days later is complicated with chorea lasting seventeen days. Furthermore Wollenberg's case No. 8 is a depressive psychosis following an emotional shock in a girl 20, who at 21 developed in addition a delirious state accompanying polyarthritis, pericarditis and intercostal neuralgia, which lasted

a few weeks. A year later, while still depressed, she developed in addition, accompanying a moderate attack of chorea, a delirious state passing later into a stuporous state, which lasted eight months. The chorea persisted only three weeks.

Chorea complicating dementia præcox is rather rare. In my experience, I have encountered it but twice, and in both cases it occurred in hebephrenia. Zinn also calls attention to its occurrence in dementia præcox. These choreic symptoms occur more often in younger persons, suffering from mental disorder, but may appear at any period of life. One of Viedenz's cases is that of an involution psychosis in a senile in which the choreic manifestations ultimately disappeared. Chorea complicating these psychoses does not appear to influence the course of the psychosis in any way.

The following case of my own is a manic-depressive. A high-school girl, 15 years of age with good family history, who developed a manic-depressive psychosis of the depressive phase in December, 1909, exhibiting at first lassitude, morbid despondency, seclusiveness, difficulty of thought and retardation. This condition developed just preceding the first menstruation. Within the second month of her psychosis she had a sharp attack of acute suppurative tonsillitis of two weeks' duration, during which time her mental symptoms almost wholly disappeared. With convalescence from the tonsillitis, the mental symptoms reappeared with greater intensity, this time accompanied by considerable insomnia and definite somatic delusions in reference to her first menses, which had just appeared, and fear of contaminating the environment with her flow. Within a couple of days delusions of reference and isolated hallucinations of hearing developed, and then some clouding of consciousness. This picture represents the height of her psychosis and lasted two weeks. There was then gradual improvement for two weeks with diminution of all of the symptoms. It was in the last of the third month, when there was still present a few hallucinations, delusions of reference with despondency, fear and confusion of thought, that choreic movements began to develop in the left extremities. The chorea became general, but throughout the ten weeks of its existence was never very marked. The mental symptoms did not get worse during this period and gradually subsided synchronously with the

movements. There was at no time any delirium and consciousness at most was only slightly clouded. The hallucinations consisted mostly of the voices of people outside who threatened injury, the calling of her name and the voice of her mother, whom she believed was in distress. Confusion of thought with retardation was always prominent. There was very little voluntary thought except in the monosyllabic expressions of fear, while her answers to questions were very meager and often broken off without completion. The somatic delusions and ideas of contaminations were entirely submerged when the choreic complication developed. Recovery was complete by the fifth month. With the convalescence she showed rather striking physical development and mental poise. As she herself expressed it, she was no longer a "kid."

But choreic symptoms occur as an episode not only in cases of dementia præcox, and other so-called functional psychoses but also in cases of dementia paralytica and other forms of organic dementia.

The chorea that occasionally developed during paresis, should be distinguished from the chorea following focal organic lesions, such as the post-hemiplegic chorea. The following case, the only one which I have encountered in paresis, represents this type, in which the choreic symptoms evidently do not depend upon a definite focal lesion.

This man developed his first symptoms of paresis at 36, thirteen years following a specific lesion. The disease had already been in existence one and one half years before he came under my observation, during which time he had been following the life of a tramp. Hence it is not known at just what time his choreic movements developed. When first seen he was already considerably demented and showed, in addition to the choreic movements which were general, other physical paretic symptoms, such as tremor, exaggerated deep reflexes, incoördination and defective speech. The choreic movements were so pronounced as to remind one of an advanced case of Huntington's chorea. The choreic movements remained unchanged for five months, when, during a stuporous state, they diminished considerably, and at his emergence from this stupor, after two months, were confined wholly to his facial muscles and had entirely disappeared two months later

Thus we see that the typical choreic psychosis is a form of infection delirium, which develops after the chorea has been in existence some days or weeks and is characterized chiefly by a clouding of consciousness, a dreamy confusion of thought, transient hallucinations and delusions, emotional irritability with anxiety and fear, and changeable mood. It seems worthy of note also that delusions and fear of being burned are common. Wollenberg observed this in three of his eight cases and it occurred in two of my cases. The more active symptoms of the psychosis usually subside synchronously with the motor symptoms, but commonly emotional irritability and easy mental fatigue persist long afterwards. The mental symptoms most often run parallel to the intensity of the motor symptoms, though this is by no means the rule, as in some cases with light choreic movements the mental symptoms are markedly prolonged. Such a disproportion, however, usually exists only where there is a strong neurotic and psychopathic constitution.

The course of the choreic psychosis is usually short and the symptoms terminate favorably in a few days or weeks in the majority of cases. Not a few cases, particularly those in which polyarthritis and endocarditis develop with pyrexia and stupor terminate fatally. A few cases with the clearing of the acute clouded, confusional state fail to go on to complete recovery but pass into a more or less prolonged paranoid condition, from which the patient ultimately recovers.

There still remains to be briefly discussed the nature of the disease process. We have seen already that the relationship between the mental and physical symptoms of chorea is most intimate and that they are the expression of one and the same disease process. Some cases present mental symptoms first and these may predominate throughout the disease process, and persist for some time after the choreic movements have subsided. In some cases, and these far outnumber them, the mental symptoms are not at all prominent. Still all cases do show a change in mental balance. Just why this should be so, why in some the mental and in others the physical symptoms should predominate, must depend upon the predisposition of the individual to mental unbalance. Acute chorea in all cases brings with it more or less danger of an accompanying mental disorder. The intensity of

these mental symptoms, their period of onset and duration depends upon how positive this predisposition is. Or, as Zinn expresses it, there exists in chorea a germ of mental unbalance, which, under circumstances favorable to it, an appropriate soil, is permitted to germinate and to develop in a partial or full-blown psychosis.

Defective heredity stands in the same relation to acute chorea as it does to the so-called functional mental diseases. It influences the development, the course and the duration of the disease. Not the disease itself is handed down but a functional or molecular characteristic which predisposes to the development of a similar form of disease.

Likewise exciting causes play the same role in chorea as in mental diseases; such as, sudden fright, fear and other emotional shocks. They may influence the onset of chorea, or during the course of chorea may cause the developement of pronounced mental symptoms.

THE CLINICAL CLASSIFICATION OF GENERAL PARALYSIS OF THE INSANE[1]

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A review of a number of cases of General Paralysis of the Insane was suggested by the relative infrequency with which the depressed form has been exhibited among the cases at the Kankakee State Hospital and the large number of the dementing type, as compared with the percentages given by Kraepelin. Paretics present many types of mental aberration and there are formed innumerable disease pictures in consequence. In fact, it strikes one in reading the histories of a number of cases that there are types similar to practically all of the psychiatrical diseases or states considered at the present time, although the four types considered by Kraepelin seem for the most part to embrace almost all. The reason for separating the cases into certain classifications, lies in the fact that in certain types, the average duration of life, tendency to remissions, frequency of convulsions, etc., is different from those in the other groups. It is quite possible, too, that future study of the pathological changes in the brain of those who have suffered from the disease will reveal a more or less definite anatomical basis for the variety of symptoms presented, and consequently enable the diagnostician to know with some precision the location of the disease process. It will be noted that in classifying the cases I have considered them only from the view point of mental symptoms. The grouping according to the physical symptoms has not been considered.

The cases studied are those admitted since the present system of examination was inaugurated in March, 1908. When it has been impossible to obtain a comprehensive history of a case before entering the institution and where the picture is merely an end condition common to all types, it is obviously absurd to attempt to classify the case. Unfortunately such are much more common than is desirable. Of the 110 cases used, I was forced to leave

[1] Read before the Kankakee State Hospital Medical Society, October, 1910.

14 unclassified, for the reasons given above, which left 96 cases which could be used for computing percentages of the different types. It is not within the scope of this paper to deal exhaustively with the particular symptoms of each of the four types according to Kraepelin, namely, the dementing, the expansive, the agitated and the depressed, but I may cite a few cases to illustrate the essential characteristics of each. It will be obvious that no attempt is made to give complete histories of the cases, but merely to outline those symptoms which have a bearing on the subject in hand. It is of course necessary to have a clear conception of the types before we can attempt to classify the individual case. As an example of the dementing type I may refer to E. V. F., 40 years old, clerk. The trouble commenced a year and a half ago. The patient became so irritable that he refused to eat at the table when strangers were present. At his work he began to forget orders. After starting to do certain things he would forget about them before they were half accomplished and turn his attention elsewhere. He was finally discharged on account of his inability to perform his work satisfactorily. He forgot the ritual of a secret order which before he had known perfectly, and several times could not find his way home, even though the surroundings had previously been familiar to him. The only change of mood evidenced at first was the irritability above mentioned, and this was not a determining factor in the case, but rather a reaction to the first sensations of ill-being or lessened efficiency. Later the mood became somewhat euphoric, the patient stating, "I feel fine; am strong as I ever was." He was generally in a happy frame of mind, but his mood was fatuous rather than expansive. He had a few ill-defined delusions, such as having been offered a position more remunerative than any he had held before, but his attitude was like that of a child in speaking of a new toy. He was well behaved and quiet, sitting in one place for long periods of time. He answered questions readily but seldom spoke spontaneously.

The above history is similar to many others of the dementing type. The mood is happy but not heightened; the delusions of wealth and power are expressed in a lackadaisical manner, and not as though the patient realized the full import of his statements. Paretics who in health had never possessed more than a modest competence, may speak of having millions in much the

same way that a normal person would mention the time of day. This lack of adequate interest in their delusions is characteristic and dependent upon the essential point of difference between the dementing and the expansive types; the mood, its being simple and childlike in the former and heightened in the latter. Kraepelin states that the dementing type comprised 40 per cent. of his cases. I found 63 cases among 96, or about 66 per cent.

There were two cases of the above type in which the picture was suggestive of paranoic state. In these the delusions were comparatively stable, and the patients' interests in them were more nearly adequate. One such case, E. H. S., believed he had patented a hospital bed attachment. He held to his ideas over a period of five months, talked of the patent to his physicians, busied himself in drawing diagrams and complained of losing money by being kept here. He did not evidence the heightened mood and press of speech or activity characteristic of the expansive type, though he might be considered a borderline case. Whether such cases will ever be classified as a definite type is questionable. Until it is learned whether or not such cases form a fairly definite per cent. of all cases, and unless it is demonstrated that certain conclusions regarding probability of remissions, duration of life, etc., may be drawn concerning this sort of case, there will be no necessity of separating these from the other types. The delusions of the other case were persecutory in nature.

In the expansive type I have grouped the cases which were essentially manic-like. I do not mean that the picture was that of a "raving maniac," but that the case presented a manic mood together with a press of speech or activity or both. By manic mood we mean one that is heightened; that is, a positive feeling of well-being and buoyancy in excess of the patient's surroundings, or what he may believe to be his surroundings, and to which he reacts by a press of speech or of activity, flight of ideas, distractibility, etc. The following will serve to illustrate:

W. F. B., 43 years of age, merchant; onset February, 1909, entered April 21, 1909. The history states that the first change noted was that he became noisy, excited and irritable and wanted to fight. He threatened to injure his sister and was violent on one or two occasions. At time of admission to the institution he was quite talkative, showing a distinct flight of ideas, though the speech was of ordinary rapidity. He would change the subject

frequently, not reaching the goal. His mood was happy and exalted and he exhibited a delusional trend, expansive in character. He made such statements as, "I am happy, love everybody and have lots of money." "Am going to make a hundred million dollars and give it all away." "Can cure people of everything." Notes made in April, May, June and July, state that the patient continues to be restless, talkative, happy and euphoric. He had expansive delusions which are common to the type and which are perhaps considered by some, one of the essential features of the classification. I personally do not agree with this view and have not hesitated to include in the group the following case:

I. M. S., 33 years of age, housewife; entered this institution May 11, 1908. The history of the case before entering the institution is unsatisfactory, but after being admitted she showed almost constantly a pressure of speech and activity. The records state that the patient was constantly talking, and was at times emotional, laughing and crying. She hallucinated actively, talked out of the window to imaginary people. Regarding her condition during the following nine months, it was stated that she was restless, excitable, irritable, destructive to bed clothing and disrobing at times. She presented no expansive delusions until she began to show rather marked dementia nine months after her commitment.

The above shows a press of speech and activity, but the expansive delusions have practically no part in the picture. The whole expression of the patient's activities, however, indicated a heightened mood, much more important to my mind than an expressed idea of great wealth or power. In reading the histories one finds expansive delusions in a great number of cases, regardless of classification. As previously stated, however, the idea, grandiose in nature, which is but the idle creation of a mind from which the restraining influence of judgment has been removed is far different from the expansive delusion which is based upon active desires and is part of the manifestation of a manic mood. The expansive type form 26 per cent. of the cases. Kraepelin's figure is 15 or 16 per cent.

The agitated form is practically an extreme example of the expansive with marked psychomotor activity and running a rapid course. Patient whom I selected to illustrate was L. C. B., 50 years old, entered August 7, 1908, with a history of the first

change noted the latter part of the previous month. He was received in restraint, talking constantly and showing a marked flight of ideas and press of speech. It was impossible to hold his attention on account of his distractibility. He expressed delusions of great wealth, saying he had a carload of diamonds, etc. He became violent on one or two occasions and attacked the attendant. The above condition obtained throughout his illness and he died October 6, 1908, about two months after the onset of the disease. In making this statement I am depending upon a history furnished by relatives regarding the duration of the disease before admittance, and due allowance must be made for this fact. Inasmuch as the difference between the expansive and agitated forms is practically only in degree, it is probable that an agitated case entering after profound dementia has been reached and with but a meager history of the previous illness, would be classified with the expansive cases, and thereby raise the percentage of the latter type at the expense of the agitated. In considering these two types one must be careful not to include the cases that present a toxic reaction in the last stages of the disease. This may be found in any type and presents a picture not unlike the psychomotor activity of the expansive or agitated types. I found but 2 per cent. of my cases could be classified as belonging to the agitated group, whereas Kraepelin gives 11 per cent.

In the depressed form we found here as in the preceding types that the mood is the determining feature. They may at times be cheerful but their general mood is one of depression. They often have delusions in accord with their mood. Following is an example:

H. F., carpenter, 30 years old, entered March 6, 1908, the duration given as one month. The history stated it was first noted that the patient became greatly depressed with a loss of memory and insomnia. He had a fear of becoming insane and was untidy and careless of his personal appearance. There was noted dissatisfaction with self and surroundings, restlessness and confusion. His predominating idea was that he had contracted a sexual disorder. During the examination he was apprehensive and worried. His speech was retarded and he answered in monosyllables for the most part. He wept several times upon being questioned. Later he walked up and down, wringing his hands, saying, "Why did I do it? Why did I do it? I am to be

burned." During the next five months he remained in about the same condition as detailed above. Later he improved and was paroled home. Kraepelin states he found the depressed form to be 25 per cent. of all cases. Brower and Bannister state the per cent. was probably much less among their own cases. Of those I considered there were 5 per cent. The case cited above was by far the best example, the others having a mood showing but slight depression. They did not react to their delusions as markedly as did H. F. However, since the mood seemed more than anything else, one of depression, I felt I must classify them as belonging to that type. In one of these cases after showing depression for five or six months, the mood changed and the patient became euphoric and somewhat expansive. Kraepelin mentions cases that change from a depressed to an expansive mood, presenting a picture similar to manic depressive. I found but the one example among my own cases.

Before giving the following data, it may be well to call attention to the number of cases in each group:

Demented	64
Expansive	25
Agitated	2
Depressed	5
Unclassified	14

Obviously one cannot draw many deductions from a group of two to five cases, but there may be some interest in the figures given below as suggesting further investigation.

The total number of cases admitted to the institution between the dates of March 2, 1908, and July 6, 1910, was 1,187, paresis comprising about 9 per cent.

The average age at time of admission is as follows:

All types	43 years, 1 month
Demented	43 years, 8 months
Expansive	41 years, 3 months
Agitated	47 years, 6 months
Depressed	40 years, 8 months
Unclassified	45 years

Diffendorf states the average age of onset in 172 cases was 42 years which approximates our figures. It is to be remembered that one of the most difficult things to obtain from relatives is the duration of the disease before admittance. There is often a marked discrepancy between the date of onset furnished by the interrogatory and that obtained by personal interview with a near

relative. This is my excuse for giving the average age at time of admission, rather than age at time of onset. There was none whose age at time of entrance was less than 28, except one, a case of juvenile paresis, 14 years of age. 43 were 40 years of age or under, whereas 66 were 41 or over, and 20 of that number were 51 or over. Of the 110 cases admitted since March, 1908, 45 have died. It would be interesting to know the average length of life of each type, but the number is too small and the admissions too recent to warrant any deductions.

In looking for a specific history the blanks were very unsatisfactory; there were only 27 cases giving a positive history of syphilis. Including all cases where suspicious scarring was found, as well as those of positive and suggestive histories, I found only 37 per cent. This is far too low a figure according to practically all authorities, and its only significance is in pointing out the unreliability of such information furnished our institutions. The per cent. of those of the demented and expansive types having convulsions or paralytic strokes, was identical 44 per cent. and of all types 43.5 per cent. Kraepelin states epileptiform or apoplectiform seizures occur in from 46 to 60 per cent. of the cases. The cases showing remissions were 18 per cent. and for each type as follows:

	Per Cent.
Demented	9½
Expansive	40
Agitated	None
Depressed	40
Unclassified	14

The relatively small per cent. occurring in the demented form is in accord with Kraepelin. For the expansive type he gives one third of the cases, not greatly differing from the 40 per cent. of my cases.

It is not claimed that the percentages given above are wholly trustworthy, as they were drawn from histories furnished by relatives, as well as from our institutional records and personal observations. It can, however, be said with quite a degree of certainty that the dementing types are proportionally more numerous and the depressed type less numerous than in the cases studied by Kraepelin. That paretics form 9 per cent. of the total number of admissions is approximately correct, although with the increasing use of the lumbar puncture and Wassermann tests, there may be a slight change in the proportion of paretics.

Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY

JOINT MEETING WITH THE PHILADELPHIA AND BOSTON NEUROLOGICAL SOCIETIES

November 14, 1911

The President, Dr. L. Pierce Clark, in the Chair

USE OF SALVARSAN IN SYPHILIS OF THE NERVOUS SYSTEM

Dr. T. H. Weisenburg, of Philadelphia, opened the discussion on this subject with a paper in which he reported the results of the use of salvarsan in about fifty cases of various diseases of the nervous system occurring in his own practice or in the practice of his colleagues, including Drs. McKinniss, Spencer, Ludlum, Daland, Mitchell, Francis Sinkler, Morris Lewis, Corson White and McCarthy. The following was a brief résumé of the results of these observations: In twenty cases of paresis in which salvarsan was used, there was improvement in six cases; in four of these the improvement was in the form of a remission, which in one instance lasted for six months. In the other two the improvement was very decided, so that the patients were able to return to work. In one of these cases, a patient of Dr. John K. Mitchell, the symptoms were typical, the delusions being of the expansive type. The symptoms were present for one year before treatment. The man was given two injections, and for five months he had been well and at work. The second case, a patient of Dr. Weisenburg, was a man about 50, with infection, with the typical symptoms, who only had one injection. He has been at his work as a railroad switchman for about five months, and continues to do well. In three cases of psychoses with cerebral syphilitic lesions, no improvement was noticed in any instance. In five miscellaneous mental cases, including tabes with psychoses but not paresis, drug psychoses, hysterical insanity and involutional melancholia, in which there was a distinct history of syphilis, there was improvement in all. All of these cases, with the exception of the two mentioned, were from the Norristown State Hospital for the Insane. In six cases of tabes there was improvement in three, so far as the pains and incoördination were concerned. In two cases of cerebrospinal syphilis there was no improvement. In five cases of hemiplegia there was improvement in the subjective symptoms in two, while a third case improved both mentally and physically. In four spinal cord cases, including spastic paraplegia and meningo-myelitis, there was improvement in the paralysis in two and improvement in the general condition in one. In two cases of neurasthenia, there was improvement in one. In a single case of periostitis there was improvement. In two cases of brain tumor there was improvement. In a case of Dr. McCarthy of

syphilitic dementia, an intravenous injection was followed three hours later by death.

Dr. Weisenburg said that Dr. Judson Daland, whose experience with salvarsan in syphilis of the nervous system was comparatively extensive, had concluded that in paresis not much could be expected from the remedy. In tabes, the pains could be somewhat relieved, and it was possible to convert a positive reaction into a negative one, which might persist for five months. Dr. Daland thought that salvarsan theoretically was contra-indicated in recent cerebral hemorrhage, as the giving of the remedy caused hyperemia and thickening and softening of the arteries which were the seat of syphilitic inflammation, thereby increasing the probability of hemorrhage. He thought this danger was increased when the drug was given intravenously, but that it was lessened when given in the muscles.

Dr. G. A. Waterman, of Boston, said that in a series of 25 cases of tabes in which salvarsan had been administered, eight had shown marked and undoubted improvement as to the pains, three reported improvement as to the ataxia, and three exhibited marked improvement in the control of the bladder. On the other hand, in ten the pains had not been influenced. In seven cases the administration of the drug had been too recent to allow a fair opinion to be formed as to the effect.

In eleven cases of cerebral syphilis there had been distinct amelioration in seven; four were unchanged, two of these being old hemiplegias in which the salvarsan was given to prevent future attacks.

In four cases of spinal syphilis, marked improvement was observed in two.

It had been demonstrated in the Out-Patient Department of the Massachusetts General Hospital that salvarsan could be administered in 0.3-gram doses to ambulatory patients, the dose being repeated two weeks later, without the occurrence of unpleasant symptoms. Thus far seven cases had been treated in this manner.

Although pain was a subjective symptom, and might be influenced by improvement in the morale of the patient, the improvement in the cases reported seemed to be too marked to be attributed to this cause, and the use of salvarsan might be considered as safe and advisable in cases where the pains were extreme, provided no special contra-indications were present.

Dr. B. Sachs, of New York, said it was not an easy matter to arrive at definite conclusions regarding the effect of a new form of treatment upon the acute and chronic diseases of the central nervous system. During the past year he had endeavored, in hospital and in private practice, to give Ehrlich's new remedy an impartial trial. Ehrlich himself was at first skeptical as to the possible use of "606" in syphilitic diseases of the nervous system, and in print as well as in personal communication expressed great hesitancy and even fear as to the employment of this drug. In view of the doubts thus expressed, Dr. Sachs said, he was more than conservative at the outset, and cautioned all those whose opinions he could influence to be most careful in the employment of this new remedy. It was for this reason that for the first few months he employed very small doses, and it was only after full justice was done to Ehrlich's suggestions that they proceeded to employ the new remedy in its full dosage. Their experience had since shown that there was no more reason to fear the drug in syphilis of the nervous system than in syphilis of any other organs of the body, and we might claim that if the proper

caution was observed in the employment of the drug, and if a satisfactory technique had been developed, it was at least as safe as were the soluble and insoluble salts of mercury. Both the intramuscular and the intravenous methods had been given a fair trial: the former had the great advantage that treatment could be given in the office or in a private laboratory, and that the patient could be sent home at once and was not likely to be disturbed in his daily routine. Whether the effect of these intramuscular injections was as marked as that of the intravenous injections, as applied to diseases of the nervous system, it was difficult to determine, since the effect of both was so largely negative, and in that respect he was more than anxious to yield to the opinion of those who were called upon to treat the earlier stages and the general manifestations of syphilitic disease.

In summing up his impressions, which were based upon a series of fifty-one cases, Dr. Sachs said that in tabes and general paresis, salvarsan had no curative effect; that it seemed to influence some of the symptoms, particularly the vesical and sexual functions, favorably, and that under its use some of the cases remained stationary; that none of them exhibited any unfavorable symptoms attributable to the drug itself, and that in these two diseases it accomplished as much but not more than was achieved in former years by the use of mercurials. Since the administration of it was practically harmless, there was every reason to give it further trial, particularly in the earliest stages of these two diseases, and especially in the cases of lues cerebri, in which it was doubtful whether the case was one of pseudo-paresis syphilitica, or whether the disease would be a true dementia paralytica.

In brain and spinal cord syphilis, the administration of salvarsan was followed by improvement in many of the symptoms, and it seemed to accomplish at least as much as mercury did in these diseases. In the acute and subacute forms of brain syphilis, particularly in those associated with convulsive seizures and with chronic headaches, the drug had exercised a distinctly beneficial influence.

In spite of these rather negative impressions, Dr. Sachs said, we must not lose sight of the fact that the drug might prove most efficient in the prevention of parasyphilitic and metasyphilitic diseases of the nervous system. That general paresis and probably tabes ran a more slowly progressive course, and, on the whole, a milder course than they did in former years, was true beyond a doubt. It was to be hoped that by the thorough treatment by salvarsan of the early stages of syphilitic disease, these late and more serious forms of specific disease of the central nervous system might be still further diminished.

Dr. I. Strauss, of New York, said that in attempting to form an opinion of the therapeutic value of salvarsan in specific disease of the central nervous system, we must rely either on changes in chemico-biological phenomena or in clinical symptoms. The chemico-biological phenomena, which included the Wassermann reaction of the blood and cerebrospinal fluid and the cytology and globulin content of the same fluid, were uncertain factors upon which to base a judgment. The Wassermann reaction might be present in the blood and absent in the cerebrospinal fluid, or vice versa, in cases which clinically presented symptoms. The lymphocytosis of the spinal fluid appeared to the speaker to be the most constant indicator of the specific nature of the disease.

We were compelled, therefore, to rely largely upon the clinical symp-

toms for our opinion. These might be objective or subjective. If the former, they furnished excellent criteria; if the latter, they could only be accepted with reservation, especially in the metasyphilitic nervous diseases, where suggestibility played so great a role.

Dr. Strauss said that in his experience, salvarsan had no effect on the objective symptoms in metasyphilitic nervous diseases. In cases showing active cerebral syphilis by the increase of symptoms, it acted well when used in conjunction with mercury, either before or after.

Dr. Charles L. Dana said that in former years he had been accustomed to treat the late syphilitic and parasyphilitic affections of the nervous system with injections of mercury and arsenic, given alternately. In three instances, of which he knew, however, the use of the arsenic injections was apparently the cause of optic atrophy, and since then he had substituted the cacodylate of soda, with results which were, so far as he could see, at least as satisfactory as those reported to-night by the use of salvarsan and mercury. The speaker said he thought that no satisfactory proof had been produced in this country, that salvarsan could not be the cause of optic neuritis. One authority, Finger of Berlin, had reported such cases.

Dr. J. A. Fordyce said that he now used the intravenous method exclusively, and whereas formerly he had employed the Schreiber method with syringe and three-way cock, he had now abandoned that in favor of the simpler gravity apparatus. As he had become more familiar with the method, he had found it unnecessary to use saline solution either before or after the injection of salvarsan. The solution was prepared with fresh, distilled water. When in Frankfort last summer he had been informed by Professor Ehrlich that the reactions following the intravenous injections of salvarsan were due in the great majority of cases to the use of old, commercially distilled water, or rather to the bacterial products present in such water, and not to the remedy itself. After returning home, he had installed a still, and now prepared the drug with water distilled on the day of use. In over sixty cases treated in this manner, he had seen reactions in only one or two, which had convinced him that Ehrlich's contention was correct. He found it advisable to keep the patients in bed one night; on the following day they resumed their ordinary occupations, and apparently suffered no inconvenience.

Dr. Fordyce said we were not yet in a position to state absolutely the number of injections that each patient should receive, or the length of the intervals that should be allowed to elapse between each injection. His method, however, was to give patients with early infections at least three injections, at intervals of two to four weeks, and patients with older infections five or six. In cases where the disease dated back five years or longer he found it very difficult to influence the serum reaction even with a larger number of injections. The speaker said that the recital of the cases by the gentlemen who had preceded him, in which salvarsan had failed to influence chronic diseases of the nervous system, was not surprising, as it was only claimed for the remedy that it was a specific for the organism which caused the disease. Benefit, therefore, was only to be expected in cases where the symptoms were due to an active syphilitic process in some part of the nervous system. It could not be expected that degenerated nerve tissue could be restored by any drug.

In a number of cases of tabes with pronounced pains and a strongly positive Wassermann reaction, he had seen very excellent results. He

had treated three cases of meningo-myelitis where the gait and general condition of the patient had been markedly improved: also several cases of meningitis with persistent headaches which apparently had been permanently relieved. In the majority of these cases the patients had received most intensive mercurial and potassium iodide treatment, with little or no effect on the symptoms.

In regard to nerve recurrences, Dr. Fordyce said his experience had shown that if the remedy was pushed in such cases, the affections of the special nerves disappeared. This was illustrated recently in a case of facial paralysis which developed two months after an injection of salvarsan: a second injection was given, with the very prompt disappearance of the paralysis. In a child under his care at the City Hospital, who had received 0.2 gm. of salvarsan intra-muscularly, and who developed convulsions and a hemiplegia four days later, both disappeared suddenly and had left no permanent disability. The phenomena in this case could be attributed to an acute Herxheimer reaction about an old brain lesion.

Dr. Fordyce said his experience with salvarsan had been extremely satisfactory in all cases where an active syphilitic process was present. He felt that it was a specific drug, and that if used intelligently and intensively in the early stages of the disease, syphilitic and parasyphilitic affections of the nervous system would become less frequent.

In regard to the statement made by one of the speakers as to the benefit derived from cacodylate of soda, he referred to the experiments made by Nichols of the Army Medical School at Washington, which showed that cacodylate of soda had absolutely no effect on the spirochætæ of syphilis, while on the contrary these organisms were promptly killed by salvarsan.

Dr. H. Goldenberg said that one was likely to argue from *post hoc* to the *propter hoc*, and to forget that in general paresis spontaneous remissions occurred and that in tabes the psychic effect entered as an important factor. He was sure that in a few cases of general paresis he had not observed any lasting benefit from the drug. If we wished to compare the effect of salvarsan and mercury in the other syphilitic affections of the nervous system, we must not fall into the error of taking on one side a weak mercurial preparation, like the bichloride, and on the other a most powerful drug like salvarsan. A fairer comparison would be with the two much more powerful preparations, namely, calomel and gray oil. The speaker said that personally he felt that in some of his cases of tabes, salvarsan had surpassed these remedies, and in cases of cerebrospinal lues, he was impressed, like Dr. Sachs, with the fact that the headaches, often so rebellious to the mercurial treatment, promptly disappeared after the use of salvarsan.

As to the best method of administering salvarsan, Dr. Goldenberg said he thought the intramuscular injection of an alkaline solution was at least as powerful as the intravenous method. It was, however, such a painful procedure that very few patients would submit to repeated injections. The intramuscular injection in an oily vehicle such as iodipin was less painful, but in three of his cases he had found large infiltrations from six to nine months after the injection, in one of them opening and discharging for a long time a yellowish, thin liquid which contained arsenic. The speaker said he was under the impression that after the use of this oily medium, relapses had been more frequent than with the intravenous

method, which for this and other reasons he considered the method of choice.

Dr. Goldenberg said he was optimistic enough to believe that if syphilis in its very earliest stage was treated by repeated injections of salvarsan, and combined with mercury, the number of paretics and tabetics in fifty or one hundred years hence would be very much smaller than to-day.

Dr. D. M. Kaplan said the information obtained from a study of the changes in the serum Wassermann due to therapy by mercury, iodides or arsenic was very much less in value in neurological lues than in syphilis of the viscera, bones or skin. This was due to the fact that there were much more reliable and constant laboratory findings in the study of nervous diseases due to syphilis than the positive Wassermann in the serum. The greater constancy of the changes and the simpler technique made the study of the behavior of the cerebrospinal fluid in diseases of the nervous system a much more important aid in the diagnosis and treatment than the Wassermann reaction. In performing the Wassermann reaction at the New York Neurological Institute (over 9,000 sera), only 10 per cent. of the negative reports came from patients free from a luetic taint, and upon closer investigation it was found that half of these patients were treated more or less vigorously, recently or remotely, while the other half had received no treatment at all. One per cent. of the positive reports were wrong, being obtained on sera from satisfactorily proven non-luetic individuals. The speaker said he therefore wished to emphasize the necessity of discounting the value of laboratory reports, especially where the test was as difficult as the Wassermann reaction.

The most important factor in neurological serology was the cell count in the cerebrospinal fluid, which was also the most frequently found abnormality in nervous diseases due to syphilis. The next finding of importance was the increase in the globulin content of the fluid. In their work at the Neurological Institute, the most intense increase was obtained in fluids from general paresis. The changes that were found in the spinal fluids of patients treated with salvarsan differed in no special feature from those who were treated with mercury or iodides. The cell count in tabes generally fell to normal; in spinal lues from 200 or more to about 25 cells per cu. mm., and in the few cases of general paresis, the number of cells remained practically unchanged. In one case it took three intravenous injections of salvarsan to reduce the cell count by five cells.

The globulin reaction being rarely in excess in tabes, disappeared when in excess after treatment with salvarsan. The same was true of cerebrospinal syphilis. In general paresis the excess did not, as a rule, entirely disappear. If positive before therapy, the Wassermann reaction in the spinal fluid and in the serum of paretics tended, as a rule, to remain positive. In cerebrospinal lues the result was usually negative after one or two injections. Some of their tabetic patients showed no deviation from the normal in their neuro-serological findings. This in most instances was due to previous therapy, latency of the process, to laboratory error, or to the purely degenerative condition of the disease. It was advisable that such patients should not be submitted to specific treatment. The serological index justifying the exposition of these drugs was primarily a high cell count, and, secondarily, a positive Wassermann reaction in either the spinal fluid or the serum. A paradoxical increase in globulin, without a cell count, was often found in brain tumors.

Dr. D. J. Kaliski said that in studying the effect of salvarsan on diseases of the cerebrospinal system, laboratory tests were of value not only as an aid in establishing the diagnosis, but to a certain extent in directing the treatment, and in prognosis. At the disposal of the clinician were Wassermann tests of the blood and cerebrospinal fluid, and determination of the cellular content and globulin increase in the spinal fluid. Pathological fluids showed an increase in pressure over 150 mm. of water, an increase in the globulin content and an increase in the cells (lymphocytes) in a given quantity of the blood. There may be a positive Wassermann test in the blood or in the spinal fluid, or both, and the following table showed the incidence of the reaction in the various syphilitic lesions, active or metasyphilitic, of the cerebrospinal system:

Tabo-paresis or Paresis	Wassermann positive in blood in 90–100 per cent. cases. Wassermann positive in spinal fluid in 85–90 per cent. cases. Increased lymphocytosis in 90–100 per cent. cases. Increased globulin in 90–100 per cent. cases.
Tabes	Wassermann positive in blood in 60–70 per cent. cases. Wassermann positive in spinal fluid in 10–20 per cent. cases approximately. Increased cells in 90–95 per cent. cases. Increased globulin in 90–95 per cent. cases.
C. S. Syphilis	Wassermann positive in blood in 80 per cent. cases. Wassermann positive in spinal fluid in 10–20 per cent. cases. Increased cells of globulin in about 95 per cent. cases.

If, according to Hauptmann, instead of small quantities of spinal fluid (0.1–0.2 c.c.) larger quantities are used in the test (0.4–1 c.c.) positive results with the Wassermann test are obtained in all cases of paresis and tabo-paresis and in from 80–100 per cent. of cases of tabes and cerebrospinal syphilis.

In the experience of Assman, Hüfler, Norme and others, as well as in his limited experience, there is rarely any change in the reaction in paresis, and in tabes it is only rarely made negative for a short period of time, again becoming as strongly positive as before the treatment. In active lues of the cerebrospinal system the improvement in the symptoms is apt to be definite in some cases and the reactions above cited may be similarly favorably influenced either temporarily or permanently.

THE PHILADELPHIA NEUROLOGICAL SOCIETY

October 27, 1911

The President, Dr. Alfred Reginald Allen, in the Chair

VARIABLE MIGRAINOUS RECURRENT PARALYSES FOLLOWED BY PERMANENT INCOMPLETE LATERAL HOMONYMOUS HEMIANOPSIA

By Tom A. Williams, M.D.

A dentist, 30 years of age, referred by Dr. Sterling Ruffin on December 2, 1910, had a sudden headache followed by a blurring of vision and then by lateral blindness. The diagnosis made was thrombosis of a sclerotic vessel. Blood pressure was 120, no albumin or sugar was in the urine, and the heart was normal. The reflexes were said to be exaggerated. The attack occurred while he was dressing, with a sudden headache. The history showed attacks of migraine. During these he would be totally blind a half hour; then would come nausea and vomiting. He used also to have attacks of numbness in the arms. These had ceased some years ago. His father, now aged 70, his sisters aged 35 and 45, were each subject to similar attacks of migraine, with blurring of vision and seeing with only half the visual field. A brother who was drowned is not believed to have had similar attacks. Nor does his mother have them. History of grandfathers and grandmothers is unknown. Four years ago the man lost power of the right side for some hours. His memory was impaired and he felt unable to use the right word, but by making an effort he could find the right words. He sometimes had similar paralytic attacks in the arm but cannot say whether in the right or left. During these attacks he could not find the buttons of his vest. Evidently an astereognosis was present. The attacks would last about five minutes. One year ago he had an attack in the left arm. He was reaching up for a garden rake, and found that instead of grasping the rake he missed it. In other words, it was an attack of apraxia; for when he touched the rake he found he could grasp it quite well and on that occasion there was no peculiar sensation in hand or arm. He says if he had not used the arm he would not have known anything was the matter; but on attempting to use the arm he detected the peculiarity. With this attack there was no headache or nausea, on the contrary during the attacks of numbness, he could move quite accurately. However, when he touched his clothing with his hands during the numb attacks he became nauseated and a headache would follow. There was always hemianopia after these attacks. When he was young, sometimes these attacks extended to the tongue. He could not say whether the whole tongue or whether only the front or back of the tongue was affected. He never had motor or sensory aphasia with these attacks. On one occasion he could not express his thoughts perfectly and there was hesitation and confusion when he could not do so. He could not get the word out, but no wrong word came. With these attacks there was no unconsciousness. He used his will to overcome his alarm at them, knowing by experience that they would shortly disappear. During one of his right hemiplegic attacks, the voice became high pitched for a minute.

These attacks were said to be due to oversmoking. He is not sure

that they were, but he abstained from tobacco. He now smokes four to six cigars a day. His habits otherwise are good. His feet are always cold and perspire readily. His skin bruises easily. On examination the deep reflexes were exaggerated, the plantar reflexes doubtful. Sensibility and motility were normal. There was no Chvóstek sign; slight scoliosis to the left; pupils reacted normally and promptly. There was a complete right hemianopsia. Optic papilla was normal. He was advised to stop tobacco, and was told that the hemianopsia would diminish as the effects of these migrainous attacks had ceased. He has returned to work able to see in his fine work but at last report he had still partial hemianopsia.

RECURRENT VERTIGO FROM HYPADRENALISM CURED BY OPOTHERAPY

By Tom A. Williams, M.D.

This case was referred by Dr. Wilfred Barton, of Washington, on account of his belief that the patient had psychasthenia, with request for instructions as to psychotherapeusis. She was a woman of 29, subject to attacks of vertigo and in great fear of going outside of the house in consequence. The patient showed a complete absence of hysterical tendencies, i. e., there was no hyper-suggestibility. Nor were there any psychasthenic stigmata: so the case was regarded as psychasthenic.

Physical examination was negative with the exception of a slight exaggeration of the deep reflexes and a great bruisability of the skin. Naturally the examination of the cerebellar function was very minute; but it showed no anomaly whatever. The patient used to have these vertiginous attacks suddenly, irrespective of any difference in psychological state. She would fall forward, *not unconscious*, but completely vertiginous. Objects went round, and the floor seemed to ascend and hit her in the face. Dr. Williams therefore believed that she had not psychasthenia, but functional instability of the vasomotor apparatus, possibly including that governing the vestibular centers or the labyrinthine, as when an attack occurred there was a roaring in the ears. On considering the bruisability of the tissues this might be due to a lack of adrenalin. Believing then that these attacks were possibly due to a morbid dilatability of bloodvessels with consequent hyperemia of the vestibular apparatus in some part of its course, Dr. Williams suggested adrenal substance. This was given and the attacks ceased for several months. Then she was three months without adrenal substance and had an attack. She then continued adrenal, and has had no attack since. The "phobia" has disappeared, as was to be expected, it being in reality a fear of falling and not a true phobia. Natural in the circumstances.

TWO CASES OF HYSTERIA, SENSORY AND MOTOR RESPECTIVELY, CURED RAPIDLY BY PSYCHOMOTOR DISCIPLINE WHERE PROLONGED SUGGESTION HAD FAILED

By Tom A. Williams, M.D.

A young woman, aged 28, was seen with Dr. Hardin, of Washington, D. C., to whom she was referred by Dr. Maphis, of Warrenton, Va. In

the preceding June, she had a chill after which she cried. The next day she felt very weak and had pain in the knees, she thinks only in the left knee, with hyperesthesia. There was also, she says, tenderness of the lumbar spine and later of the groin and hip. She was treated by massage and for four months was relieved. About Christmas these pains recurred when her sister visited her. There were then nausea and dull pain in the knees, which was persistent and caused her to groan in her sleep.

Examination was negative, except that there was great hyperesthesia of the patellar region above and below, and there was also hyperesthesia of one arm; also the right abdominal reflex was absent, and the adductor reflex was exaggerated on the same side.

The case was regarded as psychogenic, and that afternoon Dr. Williams attempted psychoanalysis to seek the origin of the psychalgia. Two suggestive incidents were found, one being the visit of this sister on the second occasion, the other being the fact that when first attacked her brother had a severe hysterical spell. He was a consumptive, and she was in fear of consumption. Another fact that might have had significance was that she had been for two weeks in a newspaper office during its change of ownership, and she was alone with the man in charge much of the time. As she could stay in Washington only a short time, it was better to remove the effects of whatever had been the source of the hysterical symptoms by psychomotor discipline than to try to pursue psychoanalysis, which might be unfruitful in the short time at her disposal. As the least approach towards the patient's knee would set up a spasm of terror during which adductors, hamstrings and extensors went into spasm, Dr. Williams began a course of gradual habituation, first to the approach of a person's hand towards the knee. Gradually manipulation of the patellar region was done, followed by pressure thereon. The assistance of a sister was enlisted who attended her in hospital and helped her to accomplish these exercises several times each day. In this way she taught herself in a few days to control the muscles around the knee joints so as to prevent them contracting when her knee was touched. The pain ceased when the spasm did as it was in part maintained by the latter. Then her alarm vanished, as there was no longer reason for it, and she was satisfied that her pains lay in her own power to control. The danger of her possession by a fear in conjunction with the mental vacuity engendered by lack of occupation was explained to show the genesis of false fixed ideas regarding disease. She was told how to avoid them.

She returned to Virginia in a week quite well and has remained so now for eight months.

This case shows that to cure hysteria it is not always necessary to perform complete psychoanalysis, but we can get at the *effects* of the psychic trauma even when we cannot discover its source and rectify the condition by a reorientation of ideas and proper management.

BARKING AND ROARING TIC REMOVED IN ONE DAY

By Tom A. Williams, M.D.

This patient was referred by Dr. Thomas Charles Martin. He had been treated for rectal ulcer for some months. He lived in North Carolina, having recently removed there: but not liking North Carolina he wanted to come back to Washington. It is possible that this had some-

thing to do with the development of his condition. When he sat down he would utter a series of barks, while at the same time the trunk would go into spasmodic flexion. On stripping him, there were seen strong abdominal muscles and regular bowing of the whole body along with this barking, grunting noise. Psychoanalysis showed that these attacks had begun suddenly in North Carolina at 10 P.M. one night. The significant fact was that he had eaten some sandwiches which had been sent to him by his parents in Washington and that he had been thinking despondently before he went to sleep about how nice it would be to be in Washington. He was also thinking considerably about his intestines, having been under treatment by lavage. However, the exact psychological mechanism was not discovered beyond the few suggestions contained in these discoveries. Dr. Williams thought it better to remove the effects rather than to necessarily discover the details of the genesis of his tic. So he instituted a course of psychomotor discipline. The tic which at first had come only when he lay down at night, had later occurred whenever he sat down also, and thus made life a burden. So he began by exercising in the sitting position. He was placed in a large chair, in a reclining position, and shown how deliberately to contract the recti abdominis, and to perform a series of respiratory movements as well as the series of recti movements. After a few moments, he became capable of contracting either the recti or the diaphragm. That being acquisition enough for one sitting, he was asked to come back the following day. However, he went home and tried the exercises while recumbent at night. The result was he came back the next morning and said: "Doctor, I am cured. I did not have any spell last night." Two days later, however, he relapsed. But after another discipline, he remains now well. Thus it was very simple to remove the effects in this rational way. It is so much better than the rough suggestion usually attempted. He had been treated in North Carolina by electricity, which he was assured would remove his "spasms." When this failed he was then treated by direct suggestion. When this failed he was then treated by "the most marvellous remedy known," a drug obtained from some remote country, which was guaranteed to cure, which it did not do. So that the most powerful suggestions failed in a case which was in origin suggested and conformed to Babinski's definition of hysteria, "susceptible of production by suggestion." For a motor habit had been formed, and the removal of all habits requires reeducation of the patient's volition. Indeed it is only by its action in the will that suggestion does succeed when it does.

A CASE PRESENTING SIMULTANEOUSLY TIC, FACIAL SPASM AND CHOREIC MOVEMENTS

By Alfred Gordon, M.D.

A man, aged 38, of a neuropathic make-up and a descendant of a neuropathic family, met with an accident and fell at the age of 8. Since then the various convulsive movements of the face developed. The latter consist of tic on the left side of the face and of spasmodic movements in other portions of the face. The tic is typical. It is abrupt, very brief, affecting one group of muscles but not a group innervated by one special nerve. It can be controlled by the patient to a certain extent. The other twitchings are confined to both orbicularis palpebrarum and to the muscles

on both sides of the nose, also to both frontales muscles. The condition is typical of the variety of facial spasm described by Meige in 1907 under the name of "spasm facial median." It affects the muscles of the median portions of the face, but it is a bilateral affection. The spasm is typical of ordinary facial spasm in that the contractions are fascicular and fibrillary. The elevation of one eyebrow and lowering of the other are done simultaneously. Curiously enough the extrinsic eye muscles also participate in the spasm: they roll up, downwards, etc. When the spasm of the eyebrows occurs, the eyes close but not completely. It is also interesting to observe that the spasm disappears during sleep.

The bilaterality of the affection, also the involvement of the pharynx and larynx in this case (as the patient makes spasmodic noises) speak in favor of a central lesion, probably in the bulbo-protuberantial region. This is also strengthened by the fact of the injury after which the symptoms developed. This may have been caused by a hemorrhage in the above mentioned area.

Finally the patient presents also choreic movements in the limbs.

Dr. Augustus A. Eshner said that assuming that this man had no other symptoms of organic disease than those presented, that he had no changes in his reflexes and no disorder of sensibility, that he had no changes in his eyegrounds, it seemed to him that all the movements present could be explained on the same basis—namely that of spasmodic tic. He found it difficult to see why one should inject into the case a number of different names for the several movements, which presented the characters of tic, being bizarre, purposive, repetitive, coördinate.

Dr. Tom A. Williams said he would like to express his agreement with what Dr. Eshner had stated and thought the case was decidedly one of multiple tics. It was not necessary to invoke a facial spasm to explain the fact that the patient has the condition preponderating in the eyelids. The spasms do not partake of the character of a true facial spasm. There is not the true twitter of the muscle bundles one sees in peripheral spasm. Dr. Williams quite agreed with Dr. Eshner that it was unnecessary to invoke three separate mechanisms for movements which seemed to him all of the same genetic type, viz., that of tic. As to the arm movements, they too are volitional, and though they superficially resemble chorea, their psychogenic character is manifest. The term chorea is much abused and should be confined to the movements seen in the disease named after Sydenham and Huntington and not used as a synonym for myoclonia.

Dr. Alfred Gordon stated that it was an excellent idea to endeavor to make one diagnosis, or to attempt to make one diagnosis in any case that presented a variety of manifestations, but in this particular case in his judgment, it was an impossibility to put under one name altogether different phenomena. The movements on the side of the face have no resemblance whatever to the condition of the patient's eyelids, while the contractions of the eyelids are fascicular and characteristic of a true facial spasm, the contraction of the side of the face is a different condition; it is a tic movement. How it is possible scientifically speaking to put together these various movements under one name Dr. Gordon failed to see. Then the condition of the arms and legs—it has no resemblance to tic or to spasm. They are affected with typical choreiform movements. This condition of the eyelids is a special variety of spasm which has a special symptomatology and although in some respects resembles tic, such as diminution of the movements by voluntary effort, the other symptoms,

especially the kind of contractions are typical of facial spasm. Then much as he wanted to use one name, to say that the man suffers from one disease, Dr. Gordon said that he could not admit it because the various movements are different from each other. The man represented three different kinds of movements in various parts of his body.

Dr. C. W. Burr reported a case of angioneurotic edema cured after the administration of salvarsan.

Dr. Augustus A. Eshner said that in view of the fact that this man had had recurrent attacks of angioneurotic edema following the administration of various drugs and in view of the additional fact that the symptoms of syphilis disappeared in sequence of the adminstration of arsenobenzol, without the development of angioneurotic edema, is it not most likely that the angioneurotic edema also was a manifestation of the syphilitic infection?

Dr. Charles W. Burr said the strongest evidence against syphilitic intoxication being the cause of the angioneurotic edema is the fact that syphilis is common, angioneurotic edema rare. If the former caused the latter, the latter would occur much more frequently. Further in many cases of angioneurotic edema syphilis could be excluded. Dr. Burr thought it was simpler to assume that syphilis acted not specifically but mechanically. That non-specific disease of the vasomotor centers would have had the same effect.

Arsenic has been used many times in angioneurotic edema. By mouth, in Dr. Burr's case, it had no effect. He is quite sure salvarsan cured the patient.

Dr. Alfred Reginald Allen said that he had seen two cases of angioneurotic edema recently, one a Philadelphian and one a soldier returned from the Philippines. The soldier returned from the Philippines was the most pronounced case, and Dr. Allen feared that the process might become laryngeal. Dr. Allen had a careful metabolism study made and found a very decided abnormality in the amount of creatinin and indican in the urine. Nothing in the way of ordinary treatment for angioneurotic edema did the least good and he was only able to get any success in that case by pushing the salicylates to their full extent and by the outward application of mesotan in 25 per cent. solution in olive oil. The mesotan alone seemed to exert a remarkable effect upon the enormous wheals on this poor creature's body, bringing almost instant relief to the itching and this being followed by a disappearance of the urticarial areas.

Dr. J. Hendrie Lloyd and Dr. L. J. Hammond reported a case of brain tumor successfully located by means of the X-ray. The tumor was located within the posterior part of the right temporal lobe. It had undergone calcification, and was of the nature of a large psammoma, to which fact was doubtless due the success of the X-ray. Guided by the X-ray the surgeon found the tumor without difficulty and removed it.

Dr. William G. Spiller said that Dr. Pancoast had shown him the plates of the case reported, and he regretted that the stereoscopic views had not been presented. He was skeptical about the ability to recognize tumors by the X-rays, in most cases where bone was not altered, but there was no doubt in the interpretation of these X-ray pictures. A dark mass was clearly shown deep within the brain, and from the great clearness of the pictures and position of the tumor, Dr. Spiller thought the tumor had its origin in the pineal body or choroid plexus and contained lime salts. The convolutions, apparently so clearly marked in the picture, were really a

representation of the atrophy of the inner table of the skull. With Dr. Leonard he had demonstrated that by means of the X-rays the atrophy of the inner part of the skull conforming to the convolutions could be recognized, and by this means we might be aided in a diagnosis between brain tumor and hydrocephalus. This report had been published about a year ago.

Dr. F. X. Dercum said that he had seen this patient with Dr. Lloyd. If it had not been for the X-rays he thought that both Dr. Lloyd and himself would have been inclined to think the tumor below the tentorium. Of course the X-rays settled that point at once. It is very important to bear in mind when we regard the X-ray plate that the tumor was a calcareous mass and it was for that reason that there is so marked a shadow. We all of us know how many tumors we have examined by the X-rays without result. Dr. Spiller would remember a case of Dr. Dercum's in which Dr. Keen removed the growth, the tumor being enormous—it weighed over half a pound—and yet the X-rays failed to show anything whatever. Studies of that case were made by two very competent men separately and finally together, with the same negative result. It is, therefore, only in tumors which offer opacity or resistance to the X-rays or in which there is destruction or distortion of bone as in pituitary tumors, that we can hope for a shadow anything as definite or beautiful as in the X-ray pictures shown. In this instance again this picture alone enabled the localization to be made.

Dr. T. H. Weisenburg asked how thick the skull was. If he recalled the history correctly he believed the age was given as fourteen and we expect the skull at that time to be rather thin.

Dr. Charles K. Mills thought the case certainly a most interesting one and one in which the X-rays had shown more definitely than in any other recorded case the location of the tumor. The second case in which a cerebral growth was localized by the X-rays was one of his own. The plate was made by Dr. Pfahler. A case of Dr. Church was previously localized in this way. After his first case, Dr. Mills had a considerable number of brain tumor cases examined in the same way, but the results subsequently were not to his mind satisfactory, although in two or three instances the X-ray investigator thought that he obtained a shadow which indicated the position of the growth. Dr. Mills came to the conclusion that only in rare cases was this method of investigation valuable, and that it could never supplant the work of the neurological localizer, although in special cases it might be of much service. Of course it was very evident that it was of such service in the case reported by Drs. Lloyd and Hammond. The case of Dr. Mills in which a well defined shadow was shown was that of a large tumor—a very hard growth as demonstrated afterward. Dr. Mills thought that the density of the growth had something to do with the fact that the shadow was easily seen. Of course the X-rays are especially valuable in just such a case as that reported by Drs. Lloyd and Hammond, in which the tumor is situated in a zone which is either latent or in which the symptoms are not of definite character. The peculiar gait present probably had nothing to do with the location in the right temporal lobe. It is most likely that it was an evidence of ventricular involvement and perhaps of hydrocephalus.

Dr. Tom A. Williams said that a point in the case that had interested him very much was the peculiar gait, because it made him ask whether we are not in presence of what Dr. Mills has suggested, a localizing symp-

tom in this gait. Unfortunately, the description of the gait was negative rather than positive. We were told that the gait was veering to the right and in that respect suggested a cerebellar lesion. Dr. Lloyd told us that there was no cerebellar ataxia. The question is, is it possible that that anomaly might not be due to involvement of the temporo-pontine bundle, which Dejerine believes is closely allied to the cerebellar apparatus? Or was the gait a true ataxia which could be accounted for by the loss of sensibility in the lower limbs? But it is not stated whether the sense of attitudes was affected. Or was it cerebral, and due, as Dr. Mills supposes, to internal hydrocephalus? It seemed to Dr. Williams the case was worthy of record from that aspect as well as from the other aspects from which it had been presented.

Dr. J. Hendrie Lloyd said that Dr. Spiller had spoken of the picture as showing, not the convolutions themselves, but atrophy of the interior of the skull. That might be a just criticism. The X-rays show only the bony condition, not the tissue beneath it. The problem, however, remains the same. If the X-rays show a cast or mould of the convolutions, it might show whether they were flattened. It might thus under some circumstances be valuable in cases in which there is great intracranial pressure. Dr. Lloyd agreed with Dr. Dercum that, before the X-rays were taken, the idea which most neurologists would have had, was that the growth was subtentorial. The patient's gait, however, did not impress Dr. Lloyd as being altogether a cerebellar gait. Dr. Burr had said that when he saw the patient there was a hemianopsia. Dr. Moore found no hemianopsia. Dr. Lloyd said that he and Dr. Moore had gone over that subject carefully, and though there was to be found choked disc, there was no hemianopsia. If the tumor had caused pressure on the internal capsule it would probably have caused hemianopsia. The boy had distinct anesthesia of the left leg, but no other symptoms of capsular involvement. Dr. Lloyd said he believed that heretofore the X-rays had never shown satisfactorily a brain tumor. This case was successful because the tumor had undergone calcification: it gave a dense shadow, and was of large size for a psammoma, and it is probable that in that respect it may remain unique for a long time. Dr. Lloyd said he had not the measurement of the choked discs with him.

Dr. L. J. Hammond, in closing, said he could not tell Dr. Weisenburg the exact thickness of the skull by measurement, though he repeated, it was the thinnest he had ever seen, certainly not exceeding that of brown paper. It was cut away to enlarge the trephine opening with the ordinary sized operating room scissors.

Translations

THE THEORY OF SCHIZOPHRENIC NEGATIVISM

By Dr. E. Bleuler

of Zurich

Translated by William A. White, M.D.

superintendent of the government hospital for the insane, washington, d. c.

(*Continued from p. 139*)

On close examination the same grounds will be found as causes of pathological negativism as for the negative attitude in health. First one repulses when one does not wish to be disturbed. This is also regularly the case in schizophrenic negativism. All these patients are highly "autistic,"[16] that is, turned away from reality; they have retired into a dream life, or at least the essential part of their dissociated ego lives in a world of subjective ideas and wishes, so that to them reality can bring only interruptions. Many patients state this, with full consciousness, to be the reason for their behavior. They wish to remain undisturbed within themselves, and so it is apt to vex them extremely if merely the attendant comes into the room to bring food. Their stereotypies, their peculiar attitudes and other quirks have special relation to their complexes: for them they are often the realized fulfillment of their wishes; they are not only symbols of their happiness, as one might approximately conceive from the standpoint of health, but they are the essential part of happiness itself. They have, therefore, grounds enough to defend themselves against anything likely to rob them of this treasure.

It is self evident that autism does not express itself merely

[16] By autistic I understand practically what Freud (not however Havelock Ellis) means by autoerotism. I think it well, however, to avoid the latter expression, as it is misunderstood by all those not very familiar with Freud's writing. I have discussed this at length in the chapter on schizophrenia in Aschaffenburg's Hand-Book of Psychiatry. The symptom of ambivalence to be mentioned later in the text is also discussed in this book.

in centripetal relations to the outer world. There are two reasons for this: The patient who wishes to isolate himself from reality must permit the environment to act upon him as little as possible, but he must also not wish to influence it actively himself. For two reasons: By doing so he would become distracted from his interior and obliged to heed the external world so as to be able to act upon it; furthermore, through the action himself he would create new sensory stimuli and other relations with reality. The autistic and negativistic patients are therefore mostly inactive;[17] they have actively as well as passively narrowed relations with the outer world.

But the autistic patients have not only a positive reason for busying themselves undisturbed with their interior where they see their wishes fulfilled. The imagined happiness is not absolute. It is destroyed not only through the influences of the outer world and the conception of reality, but in its place appears much oftener at once under such circumstances, the sensation of the opposite, of the, in reality, unfulfilled wish. All these patients have a life wound, which is split off from the ego as well as may be, and hidden by an opposite conception. For that reason they must defend themselves against any contact with their complex; and, as in the splitup thought process of the schizophrenic, everything, so to say, may have its association to the complex, so everything may be painful to them that comes from the outside. This genesis of negativistic phenomena may often be established through observation or direct experiment when touching of the complexes calls forth the negativism, where it would not otherwise appear.

With this conduct the patients exaggerate and caricature only one of the usual manifestations of the normal. It is a general experience, that questions, which relate to complexes, are at once answered in the negative, even when the persons wish to be open, and afterwards speak of it without dissembling. For there exists an instinctive tendency to conceal the complex. Normal persons, likewise see to it that their life's wound is not touched upon, and they also often have in misfortune the tendency, to withdraw

[17] Under special circumstances this seclusion may be overcome as in the acute hyperkinesias, in which the movements result from an impulse, and in paranoids, who, while the autism is not fully complete, are sensible of the interference with their wishes, and translate them into delusions of persecution and react accordingly. In both cases there is a much narrowed relation to the outer world.

within themselves, because by contact with other men there are so many things that root up the pains, by associations with the complex. Even in consequence of bodily pains, which can not be relieved, we often see negativistic conduct, especially in children, who under such circumstances draw back and become repellant in the same manner as our patients, sometimes towards all influences from the outer world, sometimes only under special conditions.

Among children we see still other grounds for negativistic conduct: they often do not understand what is expected of them and turn against the unknown through general obstinacy, for example, during a medical examination, or in being photographed. We observe the same thing in imbeciles, the deaf and dumb and partially deaf, the dream state in epileptics, and in timid or obstinate animals. Schizophrenics also are frequently no longer able to understand the environment, and must become, in the same manner, cross and repelling, although in the course of the disease, the general blind resistance which under normal conditions is to their interest, becomes a detriment.

From the standpoint of the patients the environment moreover frequently appears not only not understandable but directly inimical; at best it does not enter into their needs. We incarcerate them in an institution, rob them of their personal rights; they do not wish to concern themselves about the world, and we wish to force them to; they have ideas of grandeur which are not recognized; they wish to love without being able to command an object; they are persecuted and find no protection, but instead, misunderstanding and refusals.

In the institution the physicians and attendants become the incarnations of such disappointments, while the other patients sympathize with the patient mostly not at all or only superficially, and at any rate stimulate the complexes much less than the officers of the institution. The relatives are sometimes drawn into the complexes, sometimes not. The difference in the effect in the negativism towards different persons is thus easily comprehended. It is just as intelligible that negativism will be called out or increased by opposition from outside, but is dispersed through the greatest possible nonchalance.

The affectivity of schizophrenia contains, furthermore, an additional root of negativism. Especially in the beginning of

the disease we can often observe a stonger touchiness of the affect, and there is much to indicate the existence of, in the later course, a pathological irritability. Under such circumstances we see, in patients who are not schizophrenics (for example, in neurasthenics) as in schizophrenics who are still capable of social relations, a drawing into themselves, the greatest possible avoidance of all stimuli and a reaction to influences which differs from negativism quantitatively only. Naturally the negativism originating from other sources produces on its side an analogous underlying affective state, so that irritability and negativism together form a vicious circle.

Increased difficulty of action and thought is a further root of negativism which is clear in some cases. There are many different reasons for this, some of which we probably do not yet know. I have not yet been able to establish, as mentioned, a specific motor disturbance. On the contrary there are phenomena resembling brain pressure. True action is moreover impeded by the disturbed associations, most commonly, however, we find in the schizophrenics a peculiar inability to direct their thoughts. "It thinks" in the patients. The flow of thought is automatic, independent of the will; often it is felt as a most painfully fatiguing compulsion; often also the pressure of thought is a matter of indifference as long as he is left to himself. So soon, however, as he is forced by stimulation from without to change the direction of his thoughts, highly distressing feelings arise in both events, which enforces an attitude of repelling.

That the negativistic repelling very often bears the outspoken stamp of the erotic must be due to a root of the negativism being in the sexuality. This is very easily understandable. The sexuality has normally a strong negativistic component; it shows itself clearest in the opposition of the female against the sexual approach, which we find in animals and also in man, where the sexual act is desired.[18] We know that there is no case of schizophrenia in whose complexes sexuality does not play a prominent role, and very often the repelling is founded in sexual delusions, the patients believing themselves loved or violated.

[18] This opposition lies apparently at the bottom of the aversion of the cultured to think or speak of sexual things. I certainly do not underrate the rôle of artificial convenience; this convenience, however, which leads to so much disadvantage and nonsense, must be grounded in our nature, otherwise it would not have developed.

In general, negativism has a close relationship to delusions and hallucinations. These can naturally not lead to a true negativism but to conduct, that can not at all be differentiated directly from negativism, and as delusions and negativism, for the most part, appear side by side, it is wholly impossible, to separate the part played by one factor from that played by the other. The difficulty is increased through the fact that delusions and especially hallucinations are often the sequela, or better, the expression of negativism; the voices do not necessarily express the negativistic state of feeling but may correspond to another affect. Indeed very frequently the delusion is stated by the patient afterwards falsely as the reason for the negativistic conduct. A young woman, with whom during a paroxysm, one could establish fairly good communication in spite of the negativism, declared afterward, however, that she thought some one tried to hypnotize her and then offer violence to her, on that account she had always done the opposite of what was desired of her.

Up to this point the description has dealt with passive negativism which opposes itself against any demand coming from outside. The resistance leads naturally to active defense, abuse, and to blows, but the doing of the opposite of what is demanded requires a special motivation which in part suggests itself. He who will not open the mouth on request, voluntarily clenches his jaws; he who answers to the request to go forward by walking backwards, is best guarded against a sudden surprise which might insist upon the carrying out of the command; he who will not sit in a certain place indicated sits better in another; he who will not eat his own portion must take another's or go hungry. In short, the opposite action is in most cases so nearby, so self evident, it so emphasizes the denial and provides such a good position of defence, that it is very apt to be used instinctively by both man and animals.

Not rarely, however, the contrary action so far overshoots the mark that the hitherto utilized motive for its explanation is no longer sufficient. Thus a patient, who wishes to go to bed and has undressed, receiving a careless command from the attendant to go to bed, at once begins to put his clothes on again. By error a patient is given cabbage, among other things, on her plate, when it is well known that she does not like it. As she usually gets no dessert, unless she has finished, she is told she need not eat

the cabbage; now she eats only the cabbage and leaves the other better liked things on her plate. This same catatonic plays the piano; so soon as she notices that she is listened to with pleasure, she stops; she looks curiously at everything unusual, but at once turns away, however, if anyone pays any attention to her. When she hears an accidental remark: "Now she is doing that," she stops at once, or does the opposite.—Here belong also the forbidden actions. There are patients who will do nothing except what is forbidden them, so that one can make use of this peculiarity.—Or the patient will not carry out an action until it is too late or is no longer possible. So it is quite usual that they first draw back the hand that they should reach out but at once extend it as soon as one turns away from them, or that they give no answer so long as one busies himself with them, but begin to speak when one turns to other patients or when one is about to leave the room. It may also happen that schizophrenics will speak for others but are dumb when asked questions themselves (whether indifferent or important is irrelevant), or when they might have wishes of their own to express.

In these cases, in which the negativism leads to actions, of course those explanations no longer suffice which explain it with the need for rest or the difficulty of the procedure. The inimical relation of the environment could rather be considered as the root for such conduct, but it is absent in many such cases and shows no parallelism with negativism where it is present. Therefore, there must be still other causes of negativism.

The tendency to generalization of single symptoms, always demonstrable in schizophrenia, first suggests itself. Stereotypies, resistances, etc., which are well founded in some occasion, readily expand and become fixed, or at least come to light on many occasions where they are out of place.

A schizophrenic may be imagined as so working up his evasions, that he carries them out when the situation does not demand it and in a manner which is in contradiction with his original (unconscious) object. I do not know how often negativistic symptoms are to be explained in this manner, but when one closely observes the individual patients, one gets the impression that the tendency to generalization does not commonly lead to exactly such conduct.

Ambitendency and ambivalency are of by far greater signifi-

cance. Both of these two related characteristics, especially the latter, are immeasurably increased in schizophrenia.

I formerly rather one sidedly applied the term negative suggestibility[19] to the psychological fact that a definite tendency to contrary or opposite action is combined with every impulse, whether coming from within or without. I would now prefer to designate the whole idea as "ambitendency." Even in health the negative constituent often gets the upper hand; so soon as one has decided on something, the feeling comes that one had better have done the opposite; people with weak will are therefore prevented from acting. In the territory of the unconscious the opposite impulse often runs counter to our wish. More especially one wishes to be potent on his wedding night, and exactly then most commonly, occurs a transitory impotence. When for any reason the menses are especially awaited, then particularly they fail, etc.

But there are exceptions. As a rule the normal person allows the pro and con to act together, as the physicist works with two forces in opposite directions in such a way that the resultant is governed by the stronger impulse. But, however, as there are always two tendencies, it needs only a small disturbance of their balanced relations, in order to bring out one of them, and this can as well be the negative as the positive one.

In schizophrenia, however, several such disturbances are present. It lies in the character of the disease, that the interassociation of ideas is loosened: each thought, each tendency can exist for itself, without influencing the others and being influenced by the others. Thus a catatonic seats herself at a strange table, cordially assures those standing about: "have no anxiety, I am going to take nothing," serves herself, however, at the same time with sweets and chews with her mouth full. She, or rather, something in her, knows that she should not help herself; that it is disagreeable to those about for her to eat at the table prepared for the guests; she therefore sooths the onlookers, and imagines herself, as not taking anything, but another component of her split psyche longs for the good things and lays to. The two psychisms, which in health would be united in an action of choice, go along here side by side without in the least influencing each other.

While in the above observation the two impulses have become

[19] Psych.-Neurol. Wochenschrift, 1904, VI Bd., Nr. 27/28.

simultaneously active it is also possible for only one impulse to become active at a given moment, giving the other free play to be operative later on. Each goal by itself may dominate the patient for a certain length of time making him the sport of his different impulses. Whether he acts in a positive or negative sense is a matter of accident more or less. Also an already carried out action can be annulled; as when a patient destroys a fully completed piece of work. The negative and positive tendencies can also change very quickly, even during the carrying out of an action. "Not seldom we observe a vacillation in the strength of the positive and negative tendencies; sometimes one, sometimes the other, gains the supremacy. There comes a sudden stand-still and then, just as suddenly, a continuation of the original movement; it continues by fits and starts and becomes angular and awkward."[20]

Kraepelin explains this by the absence of the guiding influence of permanent endeavors and volitional tendencies upon actions. A better expression would be to say that the goal is constantly changing. Gross seeks the pathogeny in the loss of the "highest psychic function." The idea of the latter is very vague. The "synthesis" of the different trends, an expression, which is used by the French for a quite similar conception, is rather a general characteristic of the normal psyche; naturally, like many others, it can become relatively easily disturbed, because it is proportionally complicated. It is not lacking, however, in children, idiots, or animals, only, corresponding to the greater simplicity of such psyches, less developed. It thus becomes difficult to designate this association of different correlated ideas and trends, which suffers first in schizophrenia, in a unity as the highest psychic function. What we observe is just the splitting, the independence of single psychisms, and we will indeed do well, in this obscure territory not to go beyond the observations.

[20] Kraepelin, Psychiatrie, Achte Auflage, I, 373.

(To be continued)

Periscope

Archiv für Psychiatrie und Nervenkrankheiten

(Vol. 48. Part 3)

25. Feeblemindedness in Childhood and Delinquent Youths. K. Rupprecht.
26. Further Observations on Human Neuroglia. Georg Eisath.
27. Combination of a Chronic Idiopathic Hydrocephalus in an Adult with Syringomyelia,—Psychosis, and Horseshoe Kidney. Kufs.
28. A Contribution to the Question of the Relation Between Apraxia and Agraphia. Vix.
29. The Upper (partial) Pyramidal Crossing (in the Pons) and its Relation to the Nuclei of the Pons and of the Cranial Nerves as Observed in Certain Rodents. P. Korolkow.
30. The Imprisonment Psychoses. W. Heinicke.
31. On Productive Activity in Hysterical Hallucinations. Lydia Felicine-Gurwitsch.
32. On the Treatment of Progressive Paralysis with Sodium Nucleinicum. Hans Hussels.
33. Nervous and Psychic Disturbances Following Lightning-stroke. Hans Willige.

25. *Feeblemindedness.*—This article is for the purpose of showing the very great importance of avoiding criminality in the young by means of education and the prevention of the development of the criminal instinct. It is pointed out that the courts up to this time have in general failed to reach the root of the matter simply by meting out punishment without adequate investigation of the roots from which the criminal instinct springs. The interest of psychiatrists in the subject has been of value, particularly with reference to a more painstaking study of weak-mindedness among children. Certain cases are quoted as illustrative of the points made. It is concluded that mental weakness in children often lies at the basis of so-called "crime." Usually this weakness is based on natural or inherited tendencies. Injury to the head may be the cause. Alcoholism in the parents is a particularly deleterious factor. The recognition of mental weakness demands the investigation of psychiatrists together with observation in the schools.

26. *Neuroglia.*—Eisath discusses the question of the human neuroglia in much detail from the biological and pathological standpoint. After alluding somewhat briefly to methods of staining, the neuroglia is described in detail from the biological standpoint, and the various elements of which it is composed are discussed, as well as its differences in various parts of the brain substance. The difficulty is recognized of determining exactly what the normal neuroglia conditions are in the brain. To reach as definite conclusions as possible in this regard, it is advisable to exclude from normal material all suspicious cases which presumably have undergone ante-mortem changes. Fresh post-mortem material is particularly

desirable in the study of this tissue. A section follows on the histopathology of the neuroglia, of which the following are some of the more important conclusions: It is difficult to classify many of the pathological changes which take place in the neuroglia because of the combination of processes in the same specimen. Certain changes are, however, important, as those concerned in the "ameboid degeneration" and those designated as "colliquation;" furthermore the appearance of perivascular granules and other structures presumably phagocytic in character. The neuroglia is studied in imbeciles, idiocy, epilepsy, and in two cases of alcoholic poisoning, with a general result that certain more or less definite changes, dependent however upon the condition in which the patient died, are discoverable; diagnostic differences in the varying psychoses cannot however be demonstrated.

The article is profusely illustrated.

27. *Hydrocephalus and Syringomyelia.*—This case is reported with explanatory remarks as indicative of a general tendency to marked degenerative changes in various parts of the body. The patient was a man of sixty, a drinker and vagabond, finally dying of exhaustion. The autopsy disclosed the conditions described in the title. Further cases illustrative of the general principle developed in this article will appear later.

28. *Apraxia and Agraphia.*—Vix reports a case illustrating the possible relationship between apraxia and agraphia. Unfortunately the localization of the pathological process in the brain was not determined post-mortem, hence the case loses much of its value from the point of view of localization. The general conclusion is reached that the dyspraxia and difficulty in writing were unassociated with each other.

29. *Pyramids in Pons.*—Korolkow concludes a brief but important paper on the upper pyramidal crossing as follows: Both in many rodents, as well as in men, a partial crossing of motor fibers may be demonstrated in the upper third of the pons. In man, the so-called mesial assessory fillet crosses either in the peduncles at the beginning of the pons or in its upper third. Part of these fibers associate themselves with the pyramidal tracts and stand in close relation to the nuclei of the cranial nerves, serving as their central motor tract. The term "upper crossing" is used to distinguish these fibers from those crossing below in the oblongata.

30. *Prison Psychoses.*—Heinicke reports an unusual case of senile mental disturbance in a woman who had frequently been imprisoned for crime of various sorts. The character of the mental disturbance in relation to the confinement of the patient is discussed from a psychological standpoint.

31. *Hysterical Hallucinations.*—In a case of hysterical hallucination, an attempt at a psychological analysis of the condition is made by Felicine-Gurwitsch. The details of this discussion do not permit of review. In general, the case is to be regarded as a peculiar form of hallucination in which each element follows in logical fashion with the exception of one, and this in connection with certain letters and words of a foreign language. Apparently there was in the case a combination of optic and acoustic hallucination.

32. *Treatment of Paresis.*—Hussels offers a clinical study of the treatment of progressive paralysis on the basis of a carefully worked out chemical study of the probable effect of natrium nucleinicum on the body metabolism. Nothing definite is to be said as to the ultimate effect of the treatment beyond the fact that it shows some encouraging features.

33. *Lightning Stroke.*—Willige has made a careful investigation of the effects of electricity upon the body both directly and indirectly applied. By true direct shock, he means that the current passes into the body without the agency of a metallic conductor; whereas the indirect shock passes through such a conductor before reaching the body. In the study of these two varieties of invasion of the current, he finds that they have in common disorders of the nervous system, constituting a mixture of organic lesions, particularly of the cranial nerves and functional disturbances seldom found with other etiology. The essential difference lies in the fact that in direct lightning-stroke, organic alterations are more prominent than the functional, and also that the prognosis of final complete recovery is better in the cases of direct shock.

E. W. TAYLOR (Boston).

Monatsschrift für Psychiatrie und Neurologie

(Vol. 29, No. 2. February, 1911)

1. Pigment Erythrocytosis in the Cerebrospinal Fluid. DR. HEILIG.
2. A Case of Atypical Syringomyelia Complicated by Psychic Disorder. M. BERNHARDT.
3. An Atypical Result of the Wassermann Reaction in an Anatomically Confirmed Case of General Paralysis. P. SCHÖNHALS.
4. Polyneuritis and Poliomyelitis. G. MODENA AND V. CAVARA.
5. Lues Cerebri and Progressive Paralysis, a Clinical and Anatomical Contribution. F. LANDSBERGEN.
6. Affect-epileptic Attacks of Neuropaths and Psychopaths. DR. BRATZ.

1. *Pigment Erythrocytosis.*—The occurrence of this condition has been noted before but the author has endeavored to ascertain its pathological significance and has studied seven cases to this end. It occurs only in chronic inflammations and neoplasms which have their origin in the meninges. The immediate cause is the vessel-congestion which occurs in the neighborhood of the disease focus. The granulation about a tuberculosis of the vertebræ is a frequent cause. In syphilitic and metasyphilitic diseases of the central nervous system a combination of lymphocytosis and pigmenterythrocytosis speaks for an especial involvement of the meninges. Three stages are to be observed—one in which erythrocytes alone are present, the next with erythrocytes and pigment, a third in which erythrocytes have disappeared and only pigment remains. To a certain extent these stages may be taken to indicate the duration of the process.

2. *Syringomyelia.*—The neurological condition had existed, by the author's own observation, for twenty years and consisted of pronounced disturbance of all qualities of sensation and enormous ataxia in the upper extremities; in the lower extremities, spastic paresis. The pupils were normal, as were all the special senses. For ten years there had been a decided paranoid trend with little variation in its content and frequent hallucinations, but no intellectual defect.

3. *Atypical Wassermann Reaction.*—The case was one of long duration. Tabes had existed for twenty years and general paralytic signs for five. The spinal fluid and serum a few days before death gave a negative Wassermann reaction (the writer used the original Wassermann tech-

nique). The diagnosis was confirmed anatomically. Another case, also punctured a few days before death, gave a positive Wassermann reaction in both spinal fluid and serum.

4. *Polyneuritis and Poliomyelitis.*—In a tuberculous individual, after severe exertion and exposure, a febrile condition with muscular pains occurred. In a few days fever subsided and was followed by a rapidly increasing paralysis, first of legs, then of arms. After three or four months there was an improvement to the extent of regaining partial use of the limbs. Three years later examination showed widespread muscular atrophy with reaction of degeneration and flaccid paralysis. The sensory disturbances were insignificant. Knee jerks were present. At autopsy brain and medulla were normal. Histological examination of the cord showed atrophy of the inner, anterior group of the anterior horn cells throughout the cord. There was a chronic inflammatory condition in the anterior gray matter; well marked degeneration in the crossed pyramidal tracts below the dorsal region (explaining the preserved knee-jerks), peripheral neuritis. The case was probably a mixed one of polyneuritis and poliomyelitis dependent upon a common cause, probably tuberculosis. The degeneration in the pyramidal tracts was probably primary.

5. *Lues Cerebri.*—The author contributes to the literature, another case of lues cerebri combined with general paralysis. In the same microscopic field it was possible to see the two processes existing side by side. Stress is laid on the chief differential point, that the perivascular infiltration in general paralysis is sharply limited to the vessel sheath while in syphilis the lymphocytes wander into the surrounding tissue like the appearance of granulation tissue. Plasma cells are much less common in the case of cerebral lues than of general paralysis. The author believes that the case shows the general paralytic alteration to be as truly syphilis as the changes known as cerebral lues. It is simply a question of activity of process. He disagrees with Fischer and Straussler who claim that cerebral syphilis should not be diagnosed without gummata being found, and that "diffuse cerebral syphilis" does not exist. Diffuse syphilis without gumma can occur in the brain as well as in the liver or testicle. Clinically the chief differential characteristic of cerebral syphilis is the frequent variation both in the physical and mental symptoms and the sudden improvements and relapses.

6. *Affect Epileptic Attacks.*—In neuropathic and psychopathic degeneracy, not only classical epileptic convulsions occur but many other seizures as well, such as fainting spells, dizzy attacks and psychic equivalents. The characteristic petit mal attacks of true epilepsy are never seen. There may be temporary loss of consciousness, but the staring gaze, distorted face, diverted eyeballs, etc., are lacking. The attacks are of episodic character, many years often intervening, they are always caused by some external incident, usually of a psychic nature, and mental deterioration does not occur. Although the convulsion of affect epilepsy cannot be differentiated from that of true epilepsy, still, there are some facts which aid the diagnosis. The spasm in affect epilepsy is less severe, injury is less common, death never occurs and they are usually isolated. A series of convulsions is rare and status is never seen. An aura occurs seldom and enuresis is less common. Regarding the theory of the cause of the attacks, the author agrees with the conception that they are the result of

temporary disturbances of the blood-circulation in the brain. In a discussion of nomenclature the author explains the advantages of the term "affect-epileptic" as applied to these attacks and why it is preferable to other words, including Dana's "psychaleptic."

J. W. Moore (Central Islip).

Review of Neurology and Psychiatry

(Vol. IX, No. 6. 1911)

1 Agraphia in a Case of Frontal Tumor. C. Macfie Campbell.
2 Disseminated Softenings in the Spinal Cord in a Case of Pancreatic Cancer. D. H. Paul.
3. Unilateral Crossed Extensor Plantar Reflex. Leonard J. Kidd.

1. *Agraphia in a Case of Frontal Tumor.*—At an early stage of the patient's illness, agraphia was a comparatively isolated symptom. Even later on it was out of proportion to the other features of the disorder. There was no apraxia. The patient was an unintelligent woman of 55. At first and for a year she had attacks of unconsciousness. Later she was certified as insane. At first she showed a dull torpid state without abnormal mental trend. Her speech was defective; she transposed syllables and slurred words. Her writing defect was not explained by the presence of either a sensory or a motor aphasia. The first symptom noticed in the case was a tendency to perseverate in crude movements of the right arm, e. g., in shaking hands; also inability to relax promptly, as well as a spontaneous utilization of the arm, without there being any reduction in the muscular force of the arm when innervated. Later there developed weakness of right arm, face and leg. Pronounced agraphia in the case showed itself not only in the inability to write from dictation but also in copying. On autopsy a thin-walled cyst was found separating the first and second convolutions of the left frontal region. It was 6 by 4 cm. in diameter, its long axis running with the sulcus. The cyst contained a clear fluid containing other cysts.

2. *Disseminated Softenings in Spinal Cord.*—Clinical signs of irritation were present. The patient was an asylum inmate with dementia of many years' standing. There was herpes at the right fifth rib, and in the distribution of the fifth cranial nerve. For three weeks prior to death there were "choreiform" movements of the jaws and arms. Disseminated foci of softening were formed throughout the cord but chiefly in the cervical segments. There was evidence of a blood infection, shown by the presence of recent endocarditis, affecting the aortic valves. This may have been the result of bacterial infection of the degenerating cancer nodules. There was no evidence that there had been a true myelitis.

3. *Crossed Extensor Plantar Reflex.*—The writer has seen but four cases of unilateral crossed extensor response. He mentions four patients with paraplegic form of disseminated sclerosis. There was present in these (1) bilateral direct plantar responses, with (2) crossed extensor response. Spasticity was present in all; in one case this was more marked on one side, and here the crossed extensor response was obtained on stimulation of the sole of the more spastic side; all showed the typically slow extension of the hallux; and, finally, in all the crossed extension

was likewise slow, but was slightly less in degree than that of the side stimulated. The writer suggests that in testing the plantar reflex the dorsal decubitus and Collier's position should always be used.

(Vol. IX, No. 7. July, 1911)

1. On the Relation of the Sympathetic of the Spinal Cord. ALEXANDER BRUCE AND J. W. DAWSON.
2. On the Reckoning Test and its Uses in Psychiatry. WILLIAM J. MALONEY.

1. *Relations of Lymphatics of Spinal Cord.*—Preceding this article is a portrait and a memorial sketch of Dr. Alexander Bruce, the founder and editor of the *Review of Neurology and Psychiatry,* who died June 4, 1911, at the age of 56 years. A list of Dr. Bruce's publications is also appended. The article itself, by Dr. Bruce and Dr. Dawson, should be read in its entirety. Dr. Dawson's tribute to Dr. Bruce in the article is interesting. The conclusions on the relations of the lymphatics of the spinal cord are as follows: "Within the spinal cord there is no lymphatic epispinal space of His; there is no perivascular space of His; there is no pericellular space of Obersteiner. The lymphatic channels, as far as we know, follow the adventitia of the capillaries, veins, and arterioles towards the surface of the cord, where they enter into the deep layer of the pia mater, through which they probably communicate with the subarachnoid space. The lymphatic path has in the main an outward direction, but there is no doubt that it admits of a current inwards or of an invasion by cellular elements, micro-organisms and toxic substances." There are 22 excellent plates with the article. These are fully described in separate text.

2. *Reckoning Test and its Uses in Psychiatry.*—The reckoning test was first employed extensively by Kraepelin and the school of experimental psychology directed by him. It is a practical test for use among the insane. Axel Oehren arranged the first reckoning test. Simple addition was chosen, and figures from 1 to 9 were used. The test consisted in adding each successive figure in a column to the sum of the preceding figures, with the greatest possible rapidity. Only the digit which for the moment has to be dealt with is displayed. The aim of the test is the discovery of the maximum number of separate acts of addition of which a person is capable in a given time. For normal minds the test has been elaborated in many ways. For the insane the test has been made as simple as possible. The method of adding each successive digit to the partial sum was later relinquished in favor of adding the figures only in pairs. For periods shorter than that which causes fatigue the writing process is largely automatic and synchronous with the uninterrupted procession of associations involved in the acts of addition. Two classes of mistakes are generally distinguished in sums examined: the "writing" errors, due to increased psycho-motor excitability causing false figures to be unconsciously commenced or even completed; and "thought" errors, arising from false associations. Kraepelin and Rivers calculated that of 68 uncorrected and 403 corrected errors which they analyzed, 12.5 per cent. were "thought" errors, 55.4 per cent. "writing" errors, and 32.1 per cent. were indeterminable. The most frequent uncorrected error was the subtraction of a digit instead of its addition. The various errors are

analyzed in the article. The writer states that the test involves such a simple technique that it is pretty generally applicable as a routine method of investigation in mental work; and that it is of differential diagnostic value especially between hysteria, neurasthenia and malingering, and affords an objective criterion of the progress of certain morbid mental states.

C. E. Atwood (New York).

Notes on the History of Psychiatry, I. II. III. Smith Ely Jelliffe. (Alienist and Neurologist, Vol. 31, No. 4 (1910), Vol. 32 (1911), No. 1, Vol. 32 (1911), No. 2.)

In these three contributions, the author presents some suggestions concerning the historical sources for the study of psychiatry, first giving a preliminary glance at the works which have appeared, more particularly in French and German literature, since English literature is meager in this material. He then presents several chapters in translation, with notes from the classical "History of Psychiatry," by Friedreich, taking up the work of Hippocrates, Æsclepiades, Erasistratus, Diocles and Celsus. He has also given a translation of an article by Flemming, on the Psychiatry of Celsus, and a verbatim translation of Celsus's chapters on Melancholia, and Mania. The work of Aretæus, from Friedreich, is given, and Adams' translation of Aretæus with that of Reynolds is also added. He then takes up the beginning of a study on the Psychiatry of the Ancients by Falk, which is one of the best known classics in this field.

(Author's Abstract.)

Franciscus Sylvius. Smith Ely Jelliffe. (Transactions of the Charaka Club, Vol. 3, 1910.)

The name Sylvius is attached to at least five different structures, the fissure, the fossa, the artery, the aqueduct and the ventricle. In this communication it is shown that Franciscus Sylvius named both the artery and the fissure, and a historical discussion of the fissure is given, with an illustration reproducing the first drawing of the fissure of Sylvius from the work of Bartholinus, Sr. The life of Sylvius is given and a portrait.

(Author's Abstract.)

Cyclothymia. Mild Forms of Manic Depressive Psychosis and Manic Depressive Constitution. Smith Ely Jelliffe. (Am. Jl. of Insanity, Vol. 66, Pt. 4.)

The author discusses the mild forms of manic depressive psychoses, particularly those in which the mental aberration bears little of the character of the well-developed psychoses. He calls attention to the fact that the elder Falret was well acquainted with these forms, and believed that they belonged to the diseases which he described as "circular insanity." Particular emphasis is laid upon the dipsomaniacal, gastric and sexual type. Some stress is put upon the diagnosis of nervous dyspepsia, the author believing that a great many of the cases so called are really nothing more nor less than mild depressions belonging to the manic depressive psychoses, and that treatment from the mental standpoint alone is justifiable.

(Author's Abstract.)

Book Reviews

Modern Theories of Criminality. By C. Bernaldo de Quiros. Translated from the Spanish by Alfonso de Salvio, Ph.D., Assistant Professor of Romance Languages, Northwestern University. Little, Brown & Company, Boston.

It would appear that at last the sun of enlightenment had commenced to break on the darkness of criminology as it is understood in the United States. It has been a long time coming, but even the hide bound conservation of legal institutions has commenced to feel the uplift, and now, more than a quarter of a century behind the procession, the lawyer is commencing to sit up, and take notice.

The American Institute of Criminal Law and Criminology is responsible for the good work, and we trust it will prosper, for the times are propitious, and the needs are tremendous.

The opening volume of this Modern Criminal Science Series, is all that could be desired. Written by a most brilliant student of the subject, well in touch with modern criminological research, at least in the Latin countries, it is well calculated to quicken interest, and to disseminate knowledge where it has been greatly needed.

The author has discussed modern theories of criminology, but has unfortunately limited himself to the workers in the Latin countries. In one sense he leans too much to the anthropological teachings, neglecting the individualistic trends demanded by really later day psychiatry.

In overlooking the psychiatric mode of approach, the author fails to be really modern. As a beginning, however, the work has been well chosen. The translation is free, yet adequate, and the book, as a whole, is well worth having.

Jelliffe.

Feebleminded Children of School Age. By C. Paget Lepage, M.D., M.R.C.P., Lecturer in School Hygiene to the Manchester University, and Physician to the Manchester Children's Hospital. With an Appendix on Treatment and Training by Mary Dendy, M.A. Longmans, Green and Co., New York.

The problem of the feebleminded child is becoming more and more acute in the United States; and deservedly so. So long as children just grew up; before our cities grew so large, and they could roam in the open; so long as competition was less keen, and a few extra mouths could be fed without stress in the family, just so long could the milder grades of feeblemindedness, particularly, escape special notice. Nor did they call for specific modes of treatment.

But the presence of a more strenuous competitive existence makes the feebleminded child much more of a problem, and one that demands an adequate adjustment.

Dr. Lepage has given an excellent clinical study; a very poor presentation of the most important phase of heredity and feeblemindedness,

from which quarter much relief is to be expected; an inadequate pathological discussion, but some most excellent general ideas regarding modes of treatment.

It is a fair book for a beginner in the general subject. We find no practical attention given to the grading tests so elaborately worked out by Binet, and now widely adopted by most active workers. He has scratched the surface, given some attractive descriptions, but nothing more. A very incomplete bibliography shows that practically only English sources have been consulted.

JELLIFFE.

AN EPITOME OF VOLUNTARY AUTOSUGGESTION. By Gerard Bonnet. (Rousset, 1910. Paris.)

"To ameliorate the individual, and consequently to develop physical vigor, moral energy and firmness of character, to perfect and maintain well-being, particular and general by simple methods available to everyone, such is the aim of this book."

Truly a modest endeavor. Let us see how the author has acquitted himself. Hereditary deficiencies he thinks are neither indelible nor irreparable, but man can by his own will, properly educated and applied, diminish his weaknesses and faults and strengthen his good qualities. Chance and hazard govern to only a slight extent and if we cannot always influence events favorably to ourselves, we can at least diminish their ill effects. The innate forces of the organism have been too long neglected. Of these voluntary autosuggestion is one by the use of which we may not only become masters of ourselves but may favorably influence other persons. By its aid one may develop the strength of his own personality, gain a position in the community and become "*someone.*" The subject is considered in eight chapters under the following headings. I. Preliminary Notions. II. Hypnotism and Autohypnotism. III. Autosuggestion. IV. Education of the Will. V. On Self-confidence. VI. Concentration of Thought. VII. Personal Power. VIII. Résumé. The first two chapters are devoted to a general view of the facts of hypnotism and suggestion. The author thinks that there is in man and in many animals a personal force which is a variety of electricity, and that the strength of personal influence, the attraction or repulsion which one is capable of exerting upon his neighbors may be dependent upon this force. The so-called "nerve force" may be of an electrical nature. This is an important element in the "Personal Power," the necessity for the cultivation of which and the means to this end form the burden of the whole work. The author is evidently a firm believer in the efficacy of hypnotism, but seems to draw it a little strong when he claims that not only character, thought and will may be altered, but physical malformations may be corrected through suggestion. Autosuggestion is suggestion made by one to himself. Under ordinary circumstances it is usually involuntary, sometimes conscious, sometimes not—and forms an important part of our mental processes. It is doubtless at the bottom of a large number of morbid manifestations both mental and physical. As examples of the latter class the author mentions some cases of the vomiting of pregnancy and of enuresis which have yielded to suggestion. While involuntary autosuggestion may be pernicious, voluntary autosuggestion can convey useful suggestions. To encourage its use to and to tell how to cultivate it to best advantage the author has prepared this book.

It is based upon the following principles: (1) "Every suggested idea which penetrates to the brain produces a mental impression; (2) Every idea repeated often enough ends by provoking the realization of the act which corresponds to it."

For the successful application of these principles three elements are necessary, the will to succeed, confidence in success and the concentration of thought upon this idea which is the autosuggestion. The author gives as an example how one should set about conquering stage fright which threatens to overcome him during a public appearance which he has to make.

His prescription is to isolate oneself in one's chamber, secure complete relaxation, mental and physical and after other thoughts have been banished to combat the idea which is importuning by the contrasuggestion that one is not afraid and will not be overcome with emotion, but will do well what he has to do. Breathe deeply and repeat this suggestion as often as is necessary. Do this several times during the day and before falling asleep at night until a definite assurance of success is realized. The will he defines as "A cerebral faculty by which we can freely dispose of a part of our nervous force to make it serve for a determined physical or intellectual task." Nervous force he thinks can be divided into what he would call "force of command," which tends to sustain the will and to keep it firmly fixed upon the idea of the end to be pursued, and "force of execution" which "nourishes the other faculties brought into play for the realization of this idea for the production of the labor necessary to obtain the result desired."

Parallel with the physical fact that an organ by judicious and long-continued exercise, gains in power and efficiency; strength of will can also be increased by constant exercise, especially by the combination of mental and physical exercise. As illustrating this the author gives a number of examples. As a muscle gains in the size and strength of its fibers by constant exercise so the brain gains strength through mental exercise. "Cerebral work provokes a veritable creation of new nerve cells."

The practice of certain muscular movements, the mind being strictly fixed upon the accomplishment of these movements and the will power being directed to this end and not allowed to stray, the author thinks the best way of cultivating and fortifying the will. The movements may be of the limbs or of the respiratory muscles, the simpler, the better. They should be intermitted when fatigue supervenes and the attention wavers, to be later recommenced. They should be practiced frequently until the attention can be held strictly upon them for a considerable period. With these exercises autosuggestion may be applied by connecting the idea to be suggested with the muscular movements. The performance of the movements the author thinks cannot but make an impression upon the brain and help to implant there the idea conveying the suggestion desired.

Self-confidence, like strength of will may be cultivated through proper autosuggestion. As to its importance the author quotes many examples. Power to concentrate and voluntarily to direct thought upon a fixed idea can be developed especially through the use of the senses of hearing and sight and of the respiratory movements. For instance to cultivate the sense of hearing, place yourself in a quiet room lying comfortably upon a bed or couch, or reclining in a chair, so that the position can be maintained a long time without fatigue. Having placed a watch

at a short distance away, listen intently, endeavoring to banish all impressions except that of the ticking. When even slight fatigue supervenes, rest. Repeat the operation at frequent intervals. If successful the watch can gradually be heard at a greater and greater distance. Not only will power of attention be strengthened but hearing may be improved by this exercise. Also, the influence of a regular and monotonous stimulus in favoring the hypnotic state is well known, and in this condition autosuggestibility is much increased.

The author gives directions for visual exercises along similar lines. Of all muscular movements at all subject to the will, the respiratory movements are of the most profound importance and have the greatest influence upon the cerebral functions. Autosuggestions combined with respiratory exercises are much fortified. As an example, the author would combat a feeling of sadness by composing himself amid quiet surroundings, breathing slowly and regularly and repeating in cadence "I am gay, I am gay." "I am" with inspiration, "gay" with expiration.

Personal force exists as a personal attribute in the favored few. In the many however, it can be more or less increased "by special proceedings which constitute a new science." This "new science" appears to have taken its origin in certain practices, both physical and intellectual, many of ancient origin, others modern. Unfortunately it is largely exploited by charlatans of various sorts. Despite the discredit thrown upon it by their advocacy, however, it contains much of value which cannot be neglected by those who really wish to advance the interests of humanity. Into the particularities exposed by the author, the space of a review forbids entering. The matter he thinks is largely one of the development of nerve force—which he again compares to electric energy.

With the idea of an emanation of force, perceptible under certain conditions as an "aura" (popular in certain circles to-day) he seems at least sympathetic. Toward the end of his chapter he considers briefly and in a somewhat popular vein the phenomena of hypnotism and its use in increasing susceptibility to suggestion. To English speaking readers his statements will probably appear somewhat exaggerated and his anticipations too sanguine. Nevertheless he has produced a very readable book which is full of suggestions useful to physicians, teachers and all those who are interested in problems connected with the uplift of mankind.

C. L. ALLEN (Los Angeles).

DIE BEDEUTUNG DER PSYCHIATRIE FUR DEN KULTURFORTSCHRITT. Von Dr. Ewald Stier. Jena, Verlag Gustav Fischer, 1911.

The author deals with the question of psychiatry from a cultural standpoint, and discusses it first historically in relation with the early Greek ideas and later in connection with religion and the church, with pedagogy, the question of the molding of character, and also in its association with the military and the legal authorities. He takes a wide general view of the situation, and finally concludes by a short comment upon the inequality and differences that are manifested between various men and the importance of the hereditary factor in constituting these differences. His remarks are suggestive as indicating the fact that the psychiatrist appreciates, but too few others do, that psychiatry, or perhaps better, the study of the abnormal mind has opened the pathway to the understanding of many and various phenomena of the human mind.

WHITE.

Die Pupillenstörungen bei Geistes-und Nervenkrankheiten. (Physiologie und Pathologie der Iris Bewegungen.) Von Prof. Oswald Bumke, Assistentin an d. Psychiatrische und Nervenklinik in Freiburg. Zweite vollständig umgearbeitete Auflage. Gustav Fischer, Jena.

Bumke's work on the pupillary disturbances in nervous and mental disease is well known. This second edition has been completely rewritten, making a volume almost double the size of the first. It is a complete guide to the subject, and one of the most useful and reliable works on the subject in any language. With Bach's Pupillenlehre, and Weiler's recent study, one is equipped for almost any emergency.

A few more illustrations, and a more complete anatomical discussion would enhance its value for the teacher.

Jelliffe.

Untersuchung der Pupille und der Irisbewegungen beim Menschen. Von Dr. Karl Weiler. Berlin, Verlag von Julius Springer, 1910. Pp. 176, M. 6.60.

The author has given us a most exhaustive and painstaking work on the pupil. It is practically the only work, with the possible exception of Bumke, which deals fully with all the questions involved in relation to the movements of the pupil, and while Bumke's is essentially a clinical work, Weiler's work is much more than that. In the first place, he takes up in the introductory chapters a very thorough explanation of the various methods of research which have been employed heretofore, and then develops his own method in connection with a special apparatus invented by himself. There follows a series of observations with the assistance of this apparatus, first in normal conditions giving the results of the investigation of the size of the pupil, the light reflex, the latent period of contraction, convergence, closure of the lids, the results of sympathetic stimulation, and the pupil during sleep and death. Then there is taken up in extenso a study of the pupil in disease, the contracted pupil, the hemiopic reflex, the Argyll-Robertson pupil, anisokoria, etc. Then follows a chapter on a study of various pupil reagents, the mydriatics and myotics, together with various other agents that affect the pupil, such as alcohol, nicotine, opium, etc. The work closes with a discussion of the pupil in paresis, syphilis, dementia præcox, manic-depressive psychosis, psychopathies, hysteria, epilepsy, and chronic alcoholism, completing a work of great value to the neurologist and psychiatrist as a work of reference in all matters relating to the pupil.

White.

Les Syncinésies. Leur rapports avec les fonctions d'inhibition motrice. Par le Dr. G. Strochlin, Ancien Interne des Hopitaux de Paris. G. Steinheil, Editeur, Paris.

In 1907, Dupré described a syndrome characterized by exaggeration of the tendon reflexes, with perturbation of the plantar reflexes, with awkwardness of the voluntary motion, and a diffuse muscular hypertonus. The whole he designated as a muscular hypogenesis, and attributed it to an insufficiency of the pyramidal tracts, due, either to an agenesis, or as resulting from an early encephalopathy. The related associated movements form the subject of this thesis by one of his pupils.

The author would prove that these syncinesies, or associated movements, are due to the insufficient inhibition from the defective pyramidal tracts. As an explanation in hemiplegia in place of Hitzig's medullary autonomy, and Westphal's cerebral inhibition hypotheses, he suggests that when one side is defective the diseased side is commanded by the sound side, through the intramedullary commissures.

JELLIFFE.

DIE ELEKTRISCHE ENTARTUNGSREAKTION. Klinische und experimentelle Studien über ihre Theorie, by Dr. Emil Reiss. Berlin, Julius Springer, 1911. Pp. 119.

One must welcome the work of Dr. Reiss on the reaction of degeneration as representing the sort of research work that it were well more were done of. Dr. Reiss's study is an attempt to define accurately the conditions of the reaction of degeneration. He follows the researches of Nernst and his followers, who believe that the electrical current brings about displacements of ions in tissues and conditions changes in concentration on the border of different mediums. Reiss takes up experimentally an investigation of the different manifestations of the reaction of degeneration, namely the polar change, increased irritability to the galvanic current, the increased opening contraction, and the slow character of the contraction itself. He reaches the general conclusion that all of the symptoms find their explanation in the changes in the muscle tissue rather than in the innervation, and as a result of experimental study, believes that this difference is dependent upon changes in the cell membrane, which interfere with and alter the assimilation and distribution of the salts. The increased irritability to the galvanic current is because the stimulus of the galvanic current has greater duration, and he states that if it is applied for short periods so its application is similar to that of the faradic the same results will be obtained as with the faradic current.

This work stands as an example of the application of modern physiochemical theories to the realm of neurology. For a long time these theories have been applied in the field of biology, particularly as made prominent by the work of Verworn and Loeb with lower organisms. Here the applicability of the ionic theory of matter and the recent physical theories of solution have yielded a rich harvest to the laboratory man. Let us welcome the application of these methods to the solution of matters neurological which for so many years have rested solely upon an empirical basis.

WHITE.

LA MALADE DE LITTLE. ÉTUDE ANATOMIQUE ET PATHOGÉNIQUE. Mme. Long-Landry, Ancien Interne des Hôpitaux de Paris. H. Delarue, Paris.

Dedicated to Professor and Madame Dejerine, this interesting thesis shows the result of many years of painstaking work. Madame Long-Landry has already presented two noteworthy studies upon the general syndrome, and has successfully completed an important research.

Many patients, with congenital spasmodic rigidity, are found in the hospital population, but there are very few clinical anatomical studies with serial sections. Hence the wide disparity of current hypotheses. The observations are largely complicated because of the frequent association with profound grades of feeblemindedness.

Little developed his ideas through twenty years, from 1843 to 1862, but his observations remained forgotten for almost as many more, it being in 1881 that Ruprecht proposed the term Little's disease.

After a short summary of the clinical features, the authoress takes up the anatomical documents with short résumés of the extensive literature. She then reports her personal observations, four in number, with copious illustrations, taken from extensive horizontal sections of the brain, midbrain, through the cord.

From the evidence that she has brought together, it would appear that congenital spasmodic states show great diversity of causal lesions. Different writers have used a variety of terms, cerebral agenesis, porencephaly, cerebral sclerosis, or atrophy, microgyria, hemorrhagic pachymeningitis, meningomyelitis, etc. These are, however, only morphological descriptions, indicating an ultimate anatomical state, which is the result not only of the initial lesion and of the secondary reaction phenomena, but also of the modifications brought about by the interrupted cerebral development. That which determines the anatomical modifications of the nervous centers, more surely than the nature of the process, is the site of the lesion, its mode of superficial and deep repair, their duration, and above all, the epoch of the development at which the central nervous system is overtaken.

In the four patients under consideration the lesions were inflammatory, predominantly meningeal, but each represents a special anatomical type, because the conditions of the attack, its duration and its precocity were different in each. In the first there was a mild diffuse meningitis of the brain and cord, with increased intensity in two symmetrical regions of the cortex. In the second, the disaster occurred later, the encephalon, already well developed, was attacked by a meningitis which had obliterated the sulci of the external surface, causing a widespread cortical atrophy. In the third the meningitis was diffuse, and was combined with an ependymitis. Coming on late, it did not alter the form of the convolutions. A hydrocephalus resulted from the ependymitis. The fourth showed a meningitis almost entirely limited to the cord, with areas of necrosis, with secondary infiltration scleroses, supporting Dejerine's view of a spinal type of Little's disease.

Etiologically, these documents point to an intrauterine infectious process. Speaking of syphilis as a possible cause, Mme. Long states that there is no evidence in the patients to support it, and states that there is no evidence in literature. The recent work of Plaut would tend to overthrow this view entirely, and lend considerable weight to the syphilitic possibilities in these cases. The question of obstetrical accidents is not entirely cleared up. The authoress tends to ascribe greater importance to intrauterine infections, but admits that such accidents play a role in the etiology. She believes in maintaining the general autonymy of the group Little's disease.

A copious bibliography concludes this very careful and complete study.

JELLIFFE.

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Original Articles

THE HEIGHT AND WEIGHT OF FEEBLE-MINDED CHILDREN IN AMERICAN INSTITUTIONS

By Henry H. Goddard

DIRECTOR OF DEPARTMENT OF RESEARCH, TRAINING SCHOOL FOR BACKWARD AND FEEBLE-MINDED CHILDREN, VINELAND, N. J.

It has long been known that in man there is some correlation between size of body and mentality. Even among normal people, on the average, size means efficiency,—as is shown by Porter's measurements of school children.

In connection with mental defectives, the various "stigmata of degeneration" have long attracted attention. Although some of these have been proved to be not characteristic of feeble-mindedness (see Channing and Wisler on "Comparative Measurements of the Hard Palate in Normal and Feeble-minded Individuals—A Preliminary Report") and others probably will be found to be in the same category, nevertheless, unless all our notions are wrong, there must be some correlations.

It seems reasonable to expect that such relations would be found in the larger phase of whole body growth even more surely than in those special forms usually included under the term "stigmata of degeneration."

With the foregoing idea we planned to compare the growth of mental defectives with normals.

Somewhere from 5 to 10 per cent. of the estimated number of mental defectives are in special institutions provided for their

care and training. This 10 per cent. (let us say) is undoubtedly a fair sample of the whole group. It is true that it probably represents a larger proportion of the low grades (idiots) than of the high grades (morons), since the latter are, even yet, not fully recognized. At the same time, there are enough of these to serve the purpose.

TABLE I

BOYS' HEIGHT

Age	Moron		Imbecile		Idiot		Total Defectives		Normal
	Cases	Average	Cases	Average	Cases	Average	Cases	Average	Average
Birth									19.5
6 mos.							2	26.0	27.0
1 yr.							6	28.0	31.3
2 yrs.							4	33.0	33.7
3 "							8	35.7	36.8
4 "							6	37.9	38.5
5 "	14	40.3	28	40.4	25	39.7	67	40.1	41.7
6 "	16	44.5	40	44.0	28	42.0	84	43.4	43.9
7 "	30	47.7	46	45.1	45	45.1	121	45.7	46.0
8 "	41	48.2	70	47.5	46	46.8	157	47.5	48.8
9 "	50	50.7	81	49.8	36	49.3	167	50.0	50.0
10 "	61	51.6	114	51.0	77	48.4	252	50.4	51.9
11 "	62	53.7	134	53.4	63	51.2	259	52.9	53.6
12 "	66	55.8	148	54.7	67	51.7	281	54.2	55.4
13 "	73	57.4	150	56.7	72	55.3	295	56.6	57.5
14 "	81	59.6	169	58.9	59	56.0	309	58.5	60.0
15 "	99	62.2	170	60.7	56	58.2	325	60.7	62.9
16 "	74	63.6	168	62.4	50	59.0	292	62.1	64.9
17 "	76	64.8	164	63.1	50	61.6	290	63.3	66.5
18 "	73	65.2	145	64.1	56	61.8	274	64.6	67.4
19 "	47	68.4	140	64.2	65	61.5	252	64.3	67.3
20 "	53	66.0	125	65.1	43	63.3	221	65.0	67.5
21 "	33	65.2	106	65.1	45	63.7	184	64.7	67.6
22 "	33	66.1	118	64.7	26	63.3	177	64.8	67.7
23 "	27	65.3	76	64.7	42	63.1	145	64.3	67.5
24 "	15	66.2	101	64.5	35	63.3	151	64.4	67.7
25 "	20	64.9	85	64.3	36	62.5	141	63.9	
26 "	22	65.4	70	65.2	32	64.3	124	65.0	
27 "	19	67.0	74	64.9	42	63.3	135	64.7	
28 "	15	65.1	53	64.4	33	63.9	101	64.4	
29 "	18	66.0	47	63.5	22	64.4	87	64.2	
30 "	23	64.3	56	63.8	23	63.7	102	63.9	
31–70 yrs.	77	65.8	392	64.8	168	63 6	637	64.6	
	1,218		3,070		1,342		5,656		

In the following study we have secured data concerning a large proportion of this institution population,—more than half.

Historical.—In 1881 Dr. Tarbell, of the Massachusetts Institution for the Feeble Minded, made the first attempt to get a curve of growth for the feeble-minded. He weighed and meas-

ured the children of his institution and tabulated the results. His curve was published in the Proceedings of the Association of Medical Officers of American Institutions for Idiotic and Feeble-minded Persons. He gives no figures and does not tell how many children he measured, but I am informed by Dr. Fernald that there were 130 children in the institution at that time. With such a small number of cases it could not be expected that any uniform rate of growth would be discovered. Nevertheless, the work was valuable and suggestive, as we shall see later.

In 1884 Dr. Shuttleworth presented in manuscript to the above-mentioned association,[2] an idealized curve drawn by Roberts, the statistician, from data partly furnished by Dr. Shuttleworth. This study was made on 1,209 cases from the English institutions: Earlswood, Royal Albert and Larbert asylums.

This curve agrees with Tarbell's in showing these institution cases to be shorter and lighter than the general population. It also shows the girls taller and heavier at certain ages than the boys, as in the case of normal children. It seems to show that this superiority of the girls begins some two years earlier than in normal children. But here, also, the number of cases is too small to make the conclusion safe.

In 1899 Dr. Wylie[3] presented to the above-mentioned association a study based on 161 boys and 174 girls from the Minnesota Institution for the Feeble Minded. In 1903[4] he extended this to cover about 400 of each sex. His results confirm those of his predecessors and he adds the fact that the mean variation of defectives is much greater than in the case of normal people.

This paper so impressed the meeting to which it was presented that it was voted that each institution in the association should furnish its data so that a curve could be drawn that would be based upon enough cases to insure the elimination of errors due to personal equation, individual mistakes in measuring and exceptional cases. This work was undertaken by the writer and the result is here shown.

The Data.—The data have come from nineteen institutions as follows: Laconia, N. H., Waverly, Mass., Syracuse and Rome, N. Y., Polk and Elwyn, Pa., Columbus, O., Lincoln, Ill., Fort Wayne, Ind., Chippewa Falls, Wis., Winfield, Kans., Glenwood, Iowa, Grafton, N. D., Faribault, Minn., Eldridge, Cal., Boulder, Mont., The Seguin School, the New Jersey State Home for

Women, and the Training School at Vineland. Data were also furnished by the Bancroft School.

The instructions were as follows:

". . . We shall be pleased to receive from your institution the following data for each child in the institution of whom you have a record.

"Sex.

TABLE II

BOYS' WEIGHT

Age	Moron		Imbecile		Idiot		Total Defectives		Normal
	Cases	Average	Cases	Average	Cases	Average	Cases	Average	Average
Birth	60	8.6	107	8.4	101	8.9	268	8 7	7.1
6 mo.							2	15.5	
1 yr.							6	18.5	24.0
2 yrs.							4	24.5	32.5
3 "							8	31.7	34.0
4 "							6	37.3	37.3
5 "	14	39.3	25	38.8	21	35.2	60	37.8	40.0
6 "	17	45.7	31	43.3	29	39.1	77	42.3	45.2
7 "	30	53.5	43	48.0	46	45.8	119	48.8	49.5
8 "	40	55.8	85	52.0	45	51.4	170	52.8	54.5
9 "	50	59.6	80	58.3	27	55.5	157	58.2	59.6
10 "	61	63.8	114	63.4	60	57.8	235	62.1	65.4
11 "	61	71.1	150	72 2	74	64.2	285	69.6	70.7
12 "	66	79.8	148	73.5	67	63.9	281	72.7	76.9
13 "	72	87.9	149	84.0	72	74.7	293	82.6	84.8
14 "	81	96.0	169	92.5	59	83.5	309	93 4	95.2
15 "	99	107.7	168	102.8	57	87.4	324	101.3	107.4
16 "	74	116.8	168	109.2	49	98.6	291	109.4	121.
17 "	74	129.3	164	115.7	50	108 5	288	118.0	127.5
18 "	73	131.4	145	124.2	56	109.1	274	123.0	132.6
19 "	47	137.6	139	123.1	65	109.4	251	122.2	140.
20 "	53	138.4	125	129.5	43	122.0	221	130.1	143.3
21 "	33	139.0	106	131.8	46	124.3	185	131.2	145.2
22 "	33	136.8	118	129.8	26	116.2	177	129.1	148.
23 "	27	136.2	76	129.4	42	119.0	145	127.6	148.
24 "	15	142.7	101	134.5	35	125.0	151	133.1	148.
25 "	20	139.5	85	134.0	36	116.6	141	130.3	
26 "	22	137.4	70	136.2	32	128.4	124	134.4	
27 "	19	143.4	74	134.4	42	122.0	135	131.8	
28 "	15	140.7	53	136.2	33	129.6	101	134.6	
29 "	18	138.3	47	133.4	22	125.7	87	132.8	
30 "	23	137.1	56	132.3	23	124.6	102	131.6	
31–70 yrs.	77	143.5	391	137.5	168	129.0	636	136.5	
	1,274		3,187		1,436		5,923		

"Height—without shoes.

"Weight—ordinary clothing.

"Grade—at least whether idiot, imbecile or feeble-minded (moron) and whether epileptic.

"Date of birth—or age in years at time measurements were made.

"Nationality. (This need not be given unless in your opinion it is sufficiently marked to affect the average.)"

In spite of the great work involved, the various institutions responded generously to this request, and carefully prepared sheets containing the above data were forwarded to us. These were classified, grouped and averaged by us.

The number of cases with the average height and weight for each age, sex and grade including normal, moron,* imbecile, idiot, and "total defective" are given in Tables 1–4. The graphic representation of these figures in curves is given in Charts 1–7.

Discussion of Charts

Explanation.—In all the charts, except 5 and 6, the upper group of curves represents *height,* the number of inches being indicated on the *left hand* margin while the ages are found across the top and also at the bottom.

The lower group of curves represents *weight* and the pounds are given on the *right hand* margin. The age lines are the same for both groups of curves.

The measurements have been arranged by ages from five years (except for "total defective" which begins at birth) to thirty years. All over thirty have been put together to give an *adult* average. Since there are relatively large numbers of these, they are very significant as probably giving a very accurate average for the various grades of adult defectives. The curves have been drawn only to age twenty-four, while a short horizontal line at end shows the *adult* position of curve.

The normal curves in these charts are constructed from Boas' tables of "Average American Height, based on data from Boston, St. Louis, Milwaukee, Worcester, Toronto, and Oakland, Cal.,"

* The term moron, as used in this paper, covers that group of children which were formerly called, in many institutions, "feeble-minded," in the specific sense. They include the children that have a mentality comparable to that of a normal child of from eight to twelve years. On this same basis the imbecile is a child who has the mentality of a normal child somewhere between three and seven years, while the idiot is of two years or below.

The data that came to us was not classified in this way but divided into idiots and imbeciles, or idiots, imbeciles and feeble-minded, and we have been compelled to make the adjustment as well as we could, as has been specified in the text.

and Burk's average of the Boston, St. Louis and Milwaukee tables of weight.[5] These figures however, are for ages 6–16 or 18 only. Below six and above eighteen the figures are from Roberts as quoted by Donaldson.[7]

TABLE III

GIRLS' HEIGHT

Age	Moron		Imbecile		Idiot		Total Defectives		Normal
	Cases	Average	Cases	Average	Cases	Average	Cases	Average	Average
Birth									19.3
6 mos.									24.8
1 yr.							2	31.0	27.5
2 yrs.							4	27.1	32.3
3 "							5	36.1	36.2
4 "							9	41.3	38.3
5 "	6	41.4	21	38.5	17	36.3	44	38.0	40.6
6 "	9	43.0	33	43.5	27	39.0	69	41.7	43.3
7 "	11	47.5	37	45.8	19	44.0	67	45.5	45.7
8 "	13	48.5	47	47.3	14	45.5	74	47.3	47.7
9 "	21	50.9	69	49.0	26	46.4	116	48.8	49.7
10 "	22	51.6	73	50.3	43	48.3	138	49.9	51.7
11 "	19	52.8	96	51.1	42	49.8	157	51.0	53.8
12 "	34	55.7	105	55.1	37	50.7	176	54.3	56.1
13 "	45	58.8	103	57.2	44	55.0	192	56.5	58.5
14 "	39	59.2	134	57.4	30	55.3	203	57.4	60.4
15 "	46	60.7	125	58.6	31	56.5	202	58.7	61.6
16 "	56	61.2	125	59.3	34	57.3	215	59.5	62.2
17 "	58	61.2	108	59.1	43	58.6	209	59.6	62.7
18 "	71	60 8	134	60.0	34	57.1	239	59.4	62.4
19 "	59	61.3	87	58.9	41	58.7	187	60.1	62.8
20 "	59	61.6	89	61.3	37	58.3	185	60.8	63.0
21 "	51	62.0	81	60.5	28	57.9	160	60.5	63.0
22 "	43	61.9	86	60.6	23	59.6	152	60.8	62.9
23 "	37	62.6	88	60.0	30	59.7	155	60.5	63.0
24 "	39	62.5	82	60.5	35	59.0	156	60.6	62.7
25 "	36	61.3	58	60.1	27	59.4	121	60.3	
26 "	28	60.8	63	61.3	28	57.7	119	60.4	
27 "	23	60.6	66	60.0	19	60.0	108	60.1	
28 "	38	61.8	55	60.9	18	57.0	111	60.7	
29 "	26	62.0	48	59.5	16	58.3	90	60.0	
30 "	18	62.1	57	61.4	23	57.8	98	60.7	
31–70 yrs.	180	61.9	619	59.8	161	59.3	960	60.1	
	1,087		2,689		927		4,723		

It is of course to be expected that data collected from so many different places and by different people of varying training will vary much in accuracy. Nevertheless it should be said that for the most part the data bore evidence of having been made with considerable care. So far as the measurements themselves are concerned, my conviction is that they were as accurate as any-

one would have right to demand. There are, however, several things that affect the curves.

First, there is in all institutions more or less uncertainty as to the ages of *some* of the inmates. Sometimes this fact is stated, and the person is referred to as "about" such an age, or born "about" such a year. Where this was done the measurement was not used in getting our averages.

TABLE IV

GIRLS' WEIGHT

Age	Moron		Imbecile		Idiot		Total Defectives		Normal
	Cases	Average	Cases	Average	Cases	Average	Cases	Average	Average
Birth	39	8.3	63	7.9	109	7.3	211	7.7	6.9
6 mo.									
1 yr.							1	24.0	20.1
2 yrs.							4	15.6	25.3
3 "							7	25.6	31.6
4 "							7	36.0	36.1
5 "	6	43.3	16	38.5	24	33.9	46	37.0	39.2
6 "	9	43.9	28	43.4	25	34.6	62	39.9	43.4
7 "	8	48.3	37	47.6	15	43.2	60	46.6	47.7
8 "	15	56.0	47	52.2	15	48.2	77	52.2	52.5
9 "	19	58.7	67	58.5	26	51.8	112	57.0	57.4
10 "	21	67.0	73	64.6	43	55.5	137	62.1	62.9
11 "	18	72.3	95	70.8	42	64.3	155	69.3	69.5
12 "	34	81.9	104	77.8	36	73.1	174	77.6	78.7
13 "	44	84.7	101	88.1	44	79.1	189	85.2	88.7
14 "	38	104.8	133	99.5	29	83.8	200	98.3	98.3
15 "	45	113.5	123	104.2	31	93.7	199	104.7	106.7
16 "	55	107.9	124	107.7	33	95.0	212	105.8	112.3
17 "	57	119.5	108	111.8	43	102.3	208	114.9	115.4
18 "	70	115.4	132	111.8	34	100.3	236	111.2	121.1
19 "	58	121.4	87	112.5	40	107.6	185	114.3	124.0
20 "	58	119.3	89	117.1	37	103.8	184	114.6	123.4
21 "	51	121.9	80	113.0	27	111.9	158	115.7	122.0
22 "	43	122.5	84	115.0	23	109.3	150	116.2	123.4
23 "	37	123.2	88	114.6	30	110.4	155	116.0	124.1
24 "	39	127.0	82	115.7	35	110.0	156	117.0	121.0
25 "	35	122.4	58	115.9	27	103.6	120	115.0	
26 "	28	114.5	63	123.5	28	109.4	119	118.1	
27 "	23	124.0	66	116.0	18	118.0	107	118.1	
28 "	37	124.4	55	117.3	18	102.9	110	117.3	
29 "	26	127.2	48	120.6	15	106.3	89	120.1	
30 "	18	117.0	57	115.9	22	121.2	97	117.3	
31–70 yrs.	180	126.0	666	118.3	161	115.0	1,007	120 2	
	1,110		2,767		1,025		4,921		

In other cases it is sometimes customary to assign a birthday and to count the person's age from that assumed date. This we could not detect and the results in our curves seem to indicate that probably this is a disturbing factor to a certain extent.

Another and more difficult matter lies in the uncertainty of classification. We have never had any uniform system of terminology and still less any uniform criterion for classifying the different degrees of defect. Accordingly, when we attempted to divide our material into three main groups of the high, the middle, and low grades;—or as we now term them the morons, the imbeciles, and the idiots—while, as will be seen from the figures and the curves, we have been reasonably successful, nevertheless there are peculiar drops in the curves at various points which can very easily be accounted for on the assumption of an error in classification. The way in which this operates will very easily be seen from an illustration. Suppose we had 100 morons, but some person in classifying the children placed ten of those among the imbeciles. They would naturally be those who were nearest the imbeciles: that is, the shortest and lightest persons of the group; removing them from the morons would have the effect of bringing up the moron curve. On the other hand, while they are the lowest morons, they would be high for the imbecile group, and consequently if added to that group would have the effect of raising the average and bringing the curve up. In the same way the curve of the idiot might be distorted if imbeciles were put into that group. Or if some children were placed in a group higher than they belonged, both curves would be brought down. As one looks at the curve one becomes convinced that this is what has happened in some cases. The amount of disturbance in the curve would of course be determined by the relative numbers of those taken out of one group and put into another one in which they did not belong. But this influence either has not acted uniformly or there are other disturbing factors at certain ages, since, as will be seen, at some ages the curves are much more irregular than others.

Again, it must be noted that the variability both in height and weight is enormously greater for defectives than for normals (see Wylie),[4] and this results in the necessity for a much larger number of cases to give us a regular curve than is needed among normal persons.

For these reasons, then, the curves are not as regular as one would be glad to see.

The total number of cases used in this study is 10,844; divided as to sex into 5,923 males, 4,921 females. The ages are from birth to sixty.

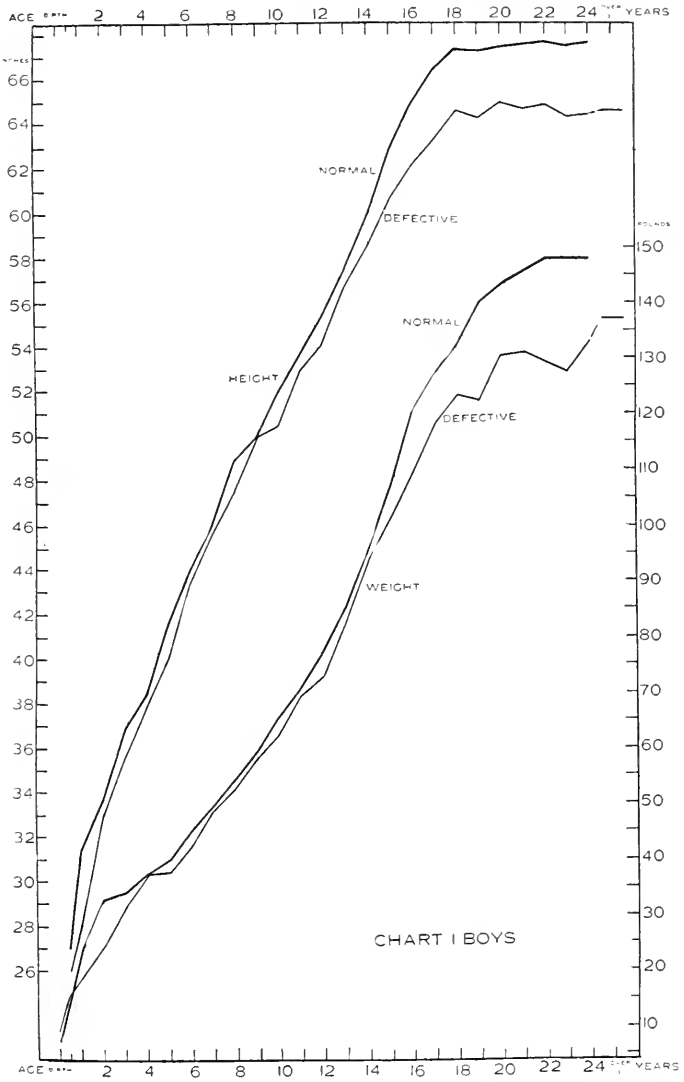
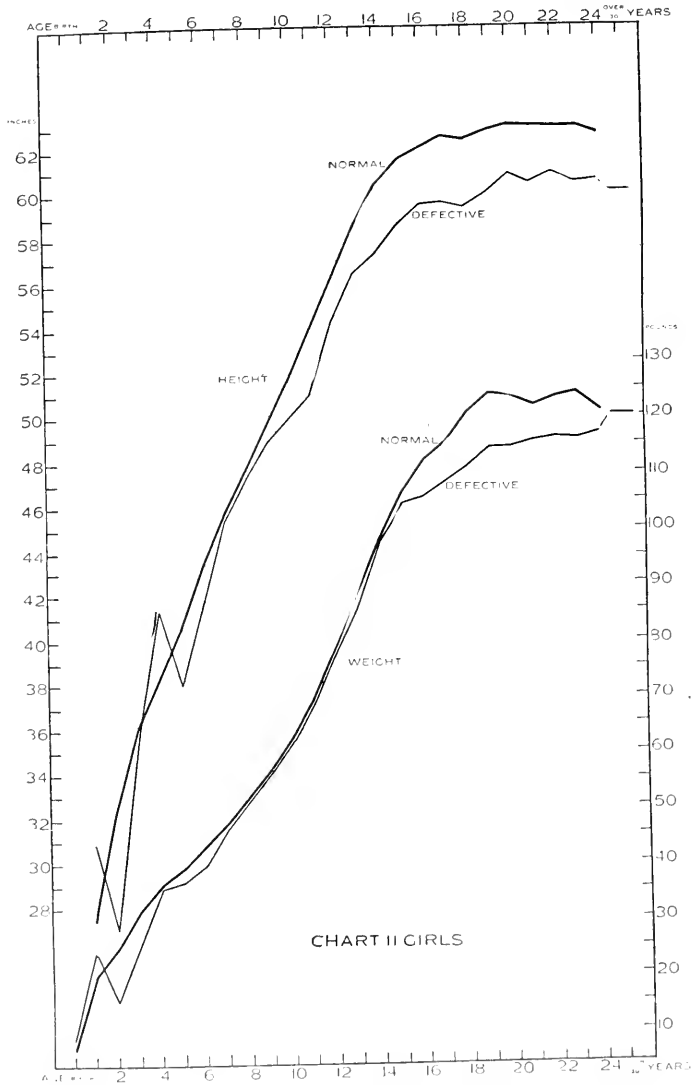


CHART I gives us the boys' curve, average of all defectives, in height and weight, as compared with normal boys. Looking at the curve for height, we find the defective boys are consistently shorter, age for age, than are normal boys.* It is further noticed that this difference increases with the age of the children. In

* The reader will note that the curves do NOT cross at age nine as at first glance they may appear in our drawing.

the earlier years there being about a half inch difference. From ten to fourteen it is about an inch, from that on it becomes more



and more until at nineteen we have a difference of about three inches. In the curve for weight again, we see the defectives are lower the difference being about two pounds in the earlier years

but at fifteen it becomes six, at sixteen twelve and reaches eighteen or twenty pounds in the early adult years.

CHART 2 shows us the curves of the girls. While very irregular before the age of five, the situation in regard to height is much the same as for boys. In weight the girls seem to deviate rather less from the normal than do the boys. At the same age of fifteen they begin to fall away rapidly from the normal curve.

It is interesting to note that in both the curves of girls and the boys the defective children are heavier at birth than normal children. By referring to the tables it will be seen that this is true for all grades,—moron, imbecile and idiot.

One of our main interests in connnection with this study has been to determine whether the different grades of defect would be shown in the different degrees of growth in height and weight. In accordance with this purpose we had asked each institution furnishing data to grade their cases as "high," "middle" or "low" (moron, imbecile, or idiot). This has enabled us to separate the data along these lines and to give the figures and plot the curves of these three grades of defectives.

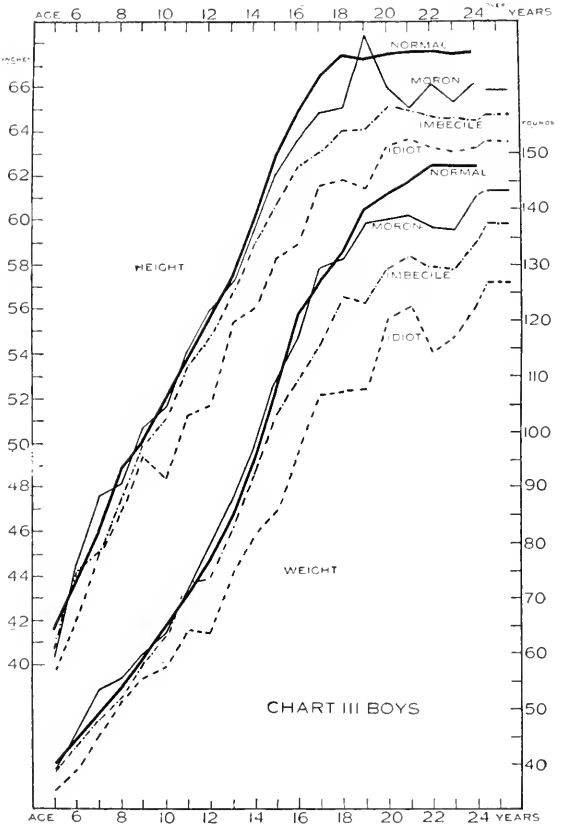
As already said in discussing the data, this classification is not uniform, and consequently the curves are somewhat irregular. Nevertheless, we have fairly satisfactory curves for the idiot, the imbecile, and moron.

It is at once evident from a glance at Charts 3 and 4 that the mental condition is correlated with the physical. The idiot is vastly inferior physically to the imbecile. Size and efficiency go together, in the long run. The cause which has acted to impair mind and brain has affected the entire growth process.

CHART 3 shows us the defective boys sub-divided into the three grades as already explained. The lowest line (broken) in each group is that of the idiot. The middle line (dot and dash) represents the imbeciles and the upper (solid) line the high grades or morons. The heavy line is the normal. We see at once that the lower the grade the greater the deviation from normal, and the deviations become greater as we advance in age.

Up to about nine or ten we see the idiots are from 2 to 4 pounds lighter and a half inch shorter than the imbeciles, and they in turn are about 1 to 2 pounds lighter and a half inch shorter than the morons. At this point the idiots fall away to eight pounds and two to three inches below imbeciles, while the latter

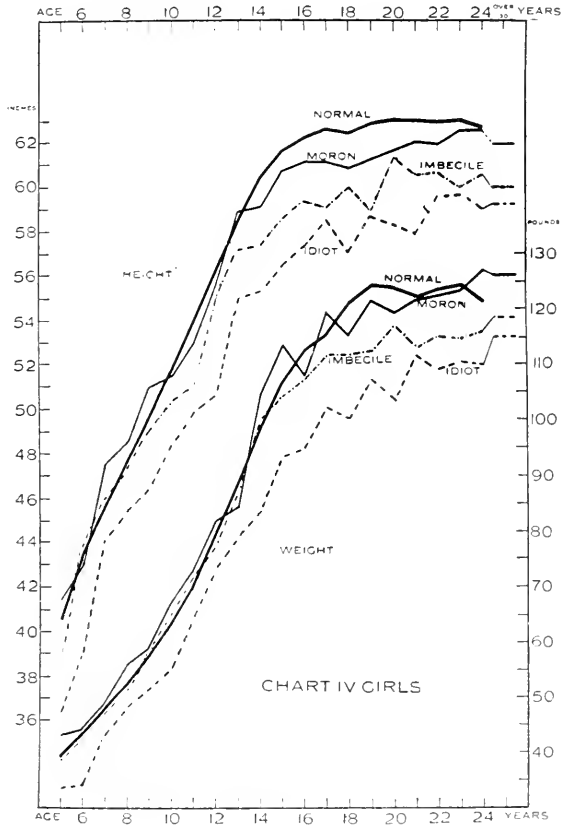
maintain very nearly their former rate of growth. This holds until about age 15 for both height and weight. Morons are close to the normal in height until about 17 years and in weight until 19. At 19–20 years practically all grades stop growing whereas the normal boy grows until 22.



We note also the greater difference between the idiots and the imbeciles than between the imbeciles and the morons. Whether this is wholly due to a matter of classification or whether there is a much greater structural and physiological difference between idiots and imbeciles than between imbeciles and morons must await further study. It is worthy of note that the morons are almost exactly normal in height until the age of fifteen and in weight until the age of nineteen when they begin to fall away.

This agrees with observation that this type of defective does not differ in *appearance* from the normal boy or girl.

This also enables us to reconcile the contradiction between Dr. Norsworthy[6] and Dr. Wylie. Dr. Norsworthy concluded from her study of the mental defective that he "almost reaches the standard of children in general." Dr. Wylie[4] said that he was



both lighter and shorter. Dr. Norsworthy studied only the *high grade* or moron of *school age*. Referring to the chart we see that the moron between the ages 5 and 19 "are not far from ordinary children." If, however, we take the line representing defectives of *all* grades we find that while "he is not two inches shorter and nine pounds lighter" he nevertheless is *one inch*

shorter and *two pounds* lighter up to the age of 15. After that he is *three inches* shorter and *twelve pounds* lighter.

We should bear in mind that our statistics for the height and weight of "*normal*" boys and girls represent really the height and weight of a rather select group after the age of thirteen or fourteen, because all of our statistics are based upon the measurements of school children, and in the public schools the children of lower classes, socially, begin to leave at thirteen and fourteen, as a result we have the high school children of increasingly better families, better heredity and better environment. It is not at all impossible that if we had the statistics of an unselected group of normal children the curve would come down to parallel that of the defective girls or boys to a somewhat later age.

On the other hand, the "normal" curve contains 2 per cent. of defective children since at the time the measurements were made no defectives were segregated in special classes.

On CHART 4 we have the curves of the girls. These show in the main the same relations as those of the boys. The differences between the different groups are somewhat greater than in the case of the boys. The idiot girls being from two to three inches shorter than the imbeciles, and the imbeciles one or two inches shorter than the morons. The curves in weight are in some respects the most satisfactory of any of the curves. That for the idiot is fairly regular and shows distinctly the defect in the growth. The imbecile curve rises in several places above that of the normal. It does not decidedly deviate from it until the age of fifteen when it falls away increasingly. The most striking thing about the chart is the showing of the moron. These girls are consistently heavier and from seven to nine they are taller than normal girls. There is an unfortunate irregularity in the weight curve at twelve or thirteen, consequently it is impossible to determine whether these girls slow up a little until thirteen and then grow at a more rapid rate, or whether the figures for thirteen should be higher than ours show, which would make the entire curve above the normal. In either case it requires some explanation. It leads us to consider the conditions under which these two groups of girls exist. The fact that this curve for the morons is all the way higher than the normals is perhaps easily explained. These children do not differ in any

noticeable way from the normal children in their physical make-up. They are not marked by any noticeable stigmata of degeneration. They are not unhealthy, but they *probably do live a much more healthy life*, receiving as they do, nourishing food in proper quantities, eating at regular intervals, living with great regularity as to sleep, and work, and play. Everything is conducive to their physical growth and indeed it would be rather surprising if they did not show a superior growth to those groups which include in the earlier years the poorer classes of our cities. Moreover in the later years, from thirteen on, the normal group includes those children who are working hard in school, worrying over their work, going into society, losing sleep and disdisturbed in their eating. The particular point of the greater growth from thirteen to eighteen (since it seems reasonably certain that the girls' curve would not go below the normal until eighteen) requires further consideration. During these years the advantage in the matter of home environment and heredity is decidedly in favor of the normal girls, because, as we have already said, the girls of lower social class have left school and are not included in the measurements that we have. While the feeble-minded girl, the moron, of the institutions, is as a rule of very poor heredity and from a very poor home. From the standpoint of nutrition the difference cannot be in the quality or quantity of food consumed. The difference must be in the assimilation of that food and that difference must be accounted for.

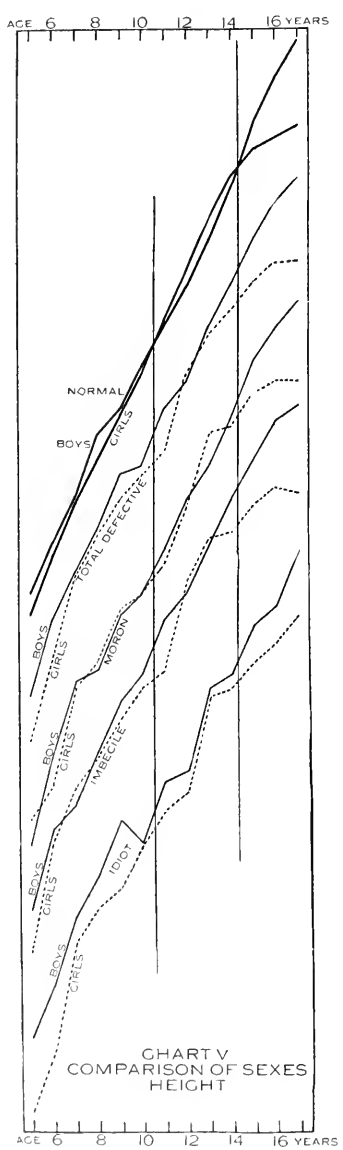
Does the absence of higher mental functions allow a more perfect functioning of the purely physical?

If we turn to the height curves, we note at once a striking rhythmic movement far more marked than in the normal and noticeable in all three grades. From 5 to 7 a steep rise; from 7 to 11 a slowing up; from 11 to 13 a steep rise again: then the final slowing to a stop.

Comparison of Sexes

It is well known that from eleven to fifteen years of age normal girls are taller and heavier than boys.

In Chart 5 we show the comparison in height between boys and girls of the various grades, the uppermost pair giving us the usual normal curves, the next the total defective, then the moron, imbecile, and idiot.



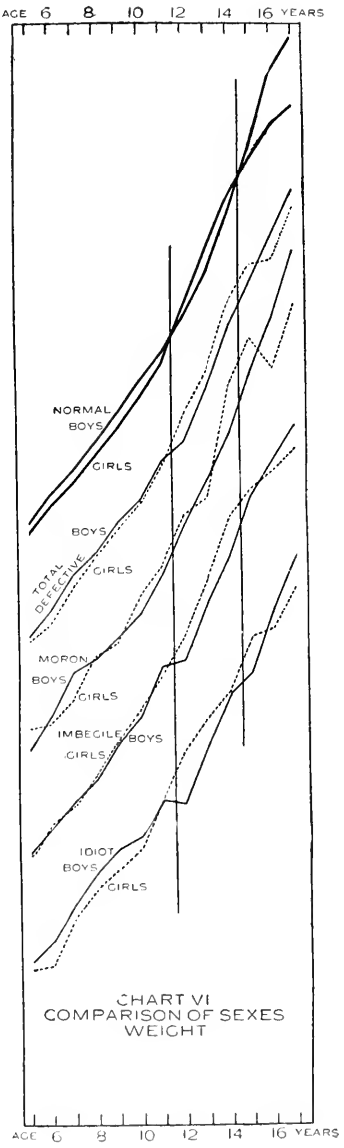
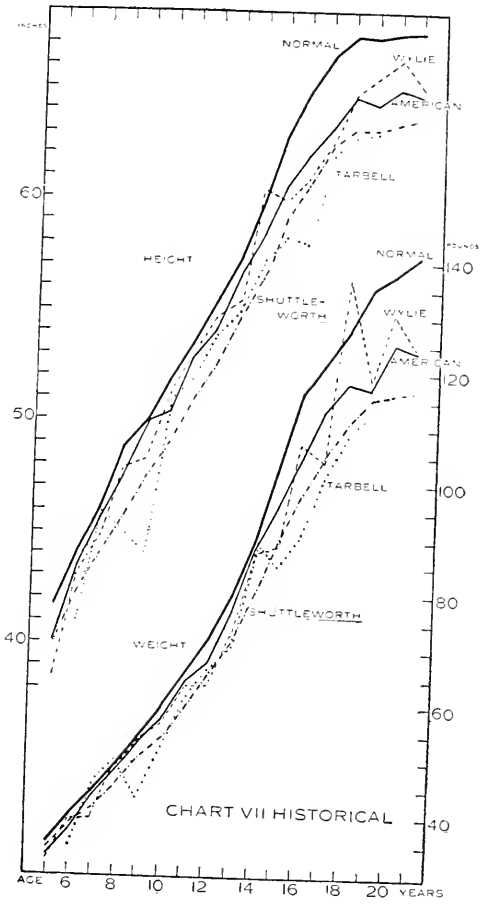


CHART 6 gives the same comparisons in weight.

It will be seen that in the total defectives, in height, there is practically no crossing, the boys being taller than the girls all the way through, save for one tenth of an inch at twelve. While in

weight we have probably about the normal condition of things, the crossing occurring between eleven and twelve and back at fifteen or sixteen.



In the moron curve for height, there seems to be a loss of the extra height earlier than with normals, as the line comes back below the boys' line at between thirteen and fourteen years of age. It is also noticeable that it goes above it at between seven and eight but drops back at ten. Perhaps this irregularity has no significance. In weight we have apparently an early development, since the girls get heavier than the boys at the age of eight and remain so until fifteen or sixteen.

In the imbecile group in height we again have an early slowing down, so that the girls become shorter than the boys at between thirteen and fourteen instead of between fifteen and sixteen. In weight the curve is noteworthy. The girls become heavier than the boys between six and seven and remain so until fifteen or sixteen.

In the case of the height of idiots, the girls' line does not cross the boys at all, remaining all the time below. In weight, they get heavier at eleven and remain heavier until fifteen.

In CHART 7 will be found the boys' curves of the earlier studies referred to in the first section of this paper.

Considering the few cases used there is a remarkable agreement between them all. What we have here named the "American" (American Association) curve is *our* "total defective." The chart shows that American mental defectives are taller and heavier than English as normal Americans are taller and heavier than normal English people. Tarbell's curve is lower than Wylie's and ours probably because in those early days the institution did not have as many morons as we do now.

The comparison also shows that such a curve as Dr. Tarbell's based on a handful of cases still has a decided value if rightly read.

CONCLUSION

The above figures seem to warrant the conclusion that we have a remarkable correlation between physical growth and mental development.

The low grade (idiot) has not only a disturbed brain function but his entire organism is disarranged and growth processes upset.

In the imbecile the same is true but to a less extent. In the moron we have the interesting phenomenon of practically normal growth during the immature years, but an arrest of growth earlier than in normals.

All defectives are heavier at birth than normals. This would once have been thought to be correlated with the defect through greater difficulty of birth necessitating the use of instruments with resulting injury. But in the light of our findings in heredity this is seen to be without force.

Sex differences are less and less marked as we go down the grades of defect.

I wish in conclusion to express my appreciation of the effort made by the superintendents to furnish data. No one knows better than I the labor involved.

I am also greatly indebted to Miss Kohnky, of Cincinnati, Miss Hill, of New Hampshire, and Miss Bell, of Baltimore, all workers in my laboratory, for painstaking labor and valuable suggestions in working up the data.

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For complete bibliography of height and weight see no. 5.

ACUTE DILIRIUM IN PSYCHIATRIC PRACTICE, WITH SPECIAL REFERENCE TO SO-CALLED ACUTE DELIRIOUS MANIA (COLLAPSE DELIRIUM)[1]

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We meet with a variety of acute deliria in the wards of our state hospitals, occurring as primary mental disturbances in certain groups of cases; as episodes in the course of other psychoses, and as less well understood terminal states standing apart by themselves, or suggestive of relationship with psychoses not usually accompanied by delirious phenomena. Every physician observes and has to do with delirious conditions, but a comprehensive definition of delirium is seemingly as difficult as the definition of insanity itself, if we are to judge by a critical contrast of the statements of various authors and writers in this field of psychological medicine. It appears to be the universal consensus of opinion, however, that the most characteristic change—the *sine qua non*—in the deliria, is the alteration in, or interference with, consciousness—best described as "clouding of consciousness." But it is evident that clouded consciousness alone does not constitute delirium when we contemplate certain stupor and other states, in which consciousness is frequently impaired, but in which dilirium *per se* is absent. In deliria, therefore, in addition to clouding of consciousness there presents a further disorganization of the intellect in its sensorial sphere, with more or less inability to correctly perceive and interpret the impressions conveyed to it by the organs of special sense. This is largely of central origin, but in certain toxic states may be in part due to changes in the peripheral neurones as well.

So we find in addition to the clouded consciousness, and consequent inability to apprehend and form associative judgments,

[1] Read before Neurological Section of the Rochester Academy of Medicine, February 1, 1911.

that we deal with an impaired and faulty sensorium, leading to hallucinations and illusions.

Accompanying these higher intellectual obscurations and perversions, and directly due to them, we encounter disorientation in some or all of the fields of time, place and person, with narrowed grasp and memory weakness for occurrences in the immediate surroundings. Dana, with his customary turning to the practical, makes plain an essential in the picture of delirium which is commonly lost sight of in the abstract discussions of the subject by most authors. I refer to the presence in all deliria of the undercurrent of activity, and would urge strongly that this is one of the necessities in the picture of the delirious complex of symptoms. This need not be, and commonly is not, a strongly marked characteristic, but nevertheless there is always some element of pressure of psycho-motor activity to be noted in every delirious case. We have then to recapitulate: clouding of consciousness and of the sensorium, with disorientation, narrowed grasp and memory weakness, to which is added an element of psycho-motor restlessness, as the criteria of all delirious cases.

The types of delirium met with in our practice among the insane are more varied than those occurring in outside practice for the reason that usually all extreme or unusual cases are promptly sent to us; thus we have to deal with the mild, dream-like delirious conditions, the muttering, picking, so-called *typhoid delirium,* the anxious deliria with agitation and fear, the moderately excited deliria of occupation, the wild hallucinatory deliria, the frenzied delirious states, and the blind, violent, destructive excitements of delirious character which sometimes occur as isolated and rapidly fatal conditions. While it can rarely be said that the special type of delirious phenomena is pathognomonic of a definite disease process, there are certain exceptions to this rule, in which it appears to point almost unmistakably to underlying conditions, as for instance the rather unique characteristics of delirium tremens to alcoholic indulgence; the low grade typhoid delirium to some infectious agency; the delirium of occupation to senility, etc. Still, even here, we must qualify our statement with the caution that they are not invariably limited to these conditions of most frequent occurrence; while other types of delirium are commonly observed in each of these states; thus it is necessary to recall the fact that prolonged alcoholic imbibition is frequently

attended by a mild, dream-like delirium, or by a dull haziness of the sensorium with delirious episodes; while it is not at all uncommon to meet with wild, active delirium in the course of infectious processes. Too much generalization in speaking of the circumstances of incidence of the deliria cannot, therefore, be profitably undertaken, and it is well to understand that we must make the most of all available methods of study of our cases in these as in other abnormal mental states.

Turning now to the special psychiatric groupings in which delirium occurs frequently, we may consider first, those cases embraced under infective-exhaustive psychoses. As the name implies, the acute infectious diseases with febrile reaction and obscured mind, are included here, as are also, by reason of their frequent inter-relationship of origin and close approximation of mental symptoms, the exhaustive states. These cases always exhibit clouded mentality of greater or less degree, and usually delirium, which may develop before, during or following the physical disease. The prefebrile deliria, while not so common as those exhibiting later during the course or following the febrile reaction, are undoubtedly similarly due to specific toxemia of infection exerting its influence on preternaturally susceptible nervous systems. The delirium may be of a wild, active type, and serve to completely mask the symptoms of the basic disease, or occur as transient episodes of anxious restlessness with vague ideas of fear of impending danger. In the auto-intoxications of diabetes and uremia similar delirious episodes may occur, frequently of a remarkably wild and violent character, under the influence of profound sensorial clouding and vivid terrifying hallucinations. Such symptoms may quite often presage the onset of convulsion, or of rapidly fatal termination.

In the true fever deliria, occurring in our state hospital experience, as in outside practice, in typhoid fever, pneumonia, influenza, rheumatic fever, meningitis and the acute exanthemata, we find the mental symptoms developing occasionally in episodic manner at the onset of the febrile reaction, but usually manifesting themselves later during the course of the fever, as the patient becomes generally weakened by the ravages of the disease and the nervous system overwhelmed by the toxins of the infection. Here again the delirium is of various shades and degrees of intensity, Kraepelin describing four groups of delirious fever

cases on the basis of severity of the delirious symptoms. This appears to be an unnecessary refinement when one considers the many factors involved in the determination of these issues, extending from the primary nervous instability of the particular individual affected, to the type, intensity and duration of the infective agent itself, and it is also understood that one type may shade imperceptibly into another at different stages of the sickness.

It is hardly necessary more than to mention the frequent wildly active delirium of pneumonia, specially when occurring in an alcoholic subject; or to call attention to the classic picture of the so-called typhoid delirium, marked by intense toxemia, profound alteration of consciousness and practically complete oblivion to external stimuli, the patient lying in a lethargic state characterized by coma vigil, carphologia and constant low muttering speech elaboration.

In post-febrile deliria the mental symptoms may occur coincidently with or immediately following the disappearance of temperature, but in the larger number of cases there is appreciable interval between the subsidence of the active fever and the appearance of the delirium which, in these cases, appears to be due more to the physical and mental exhaustion than to the actual toxic influence of the infectious process. These cases are more apt to present a condition of subacute delirium, with hazy sensorium, vague anxiety, unrest, apprehensiveness, hallucinations and tendency to misconstrue and to emotional worry and depression of a peevish character.

Under the exhaustive conditions it is common for modern authors to include the description of acute delirious mania or collapse delirium, as it is now termed. For sake of comparison, however, this delirium will be discussed in a subsequent portion of the paper.

The next most important grouping of cases—the most important from the standpoint of numbers, as well as from the sociologic point of view in regard to the influence of dissipated habits on society—is that of the toxic psychoses. We consider here, because of its relatively frequent occurrence, the alcoholic deliria, of which delirium tremens constitutes the typical and most acute manifestation of the psychoses directly attributable to alcohol. In this delirium we meet certain rather characteristic

symptoms which are rarely found together in other disorders. In addition to the excited pressure of psychomotor activity on the basis of vivid hallucinations of sight and hearing, oftentimes of taste and smell as well, there is disorientation for time and place, with preservation of orientation for personal identity. The type of the hallucinations is usually of visual objects of loathsome and terrifying character, and the patient responds actively in attempts to free himself from and avoid these objects; thus a delirium tremens patient sees wild animals about to pounce upon him —snakes and insects crawl within his garments or hide themselves in his bedding; rats scurry across the floor, and he is in a state of extreme excitement under the influence of these fictitious sensory impressions. It is interesting that in this psychosis a man who would not really be so greatly terrified, were he actually faced by such objects, repulsive though they may be, yet in his clouded delirious state all elements of normal bravery and ability to meet situations disappear and he becomes an abject coward. During all this period of terrified excitement the patient, while without knowledge of his surroundings, misconstruing nearly everything that he sees or comes in contact with and having no appreciation of time, nevertheless understands perfectly his own personal identity. Usually these patients can be momentarily withdrawn from their delirium when spoken to sharply, and at such times they may recognize the physician and be able to give fairly coherent replies to limited questioning, even appreciating that they are the victims of too much liquor and that their fears are largely chimerical in character. Almost immediately, however, the clouding is apparent, and the patient passes again into his delirious state of psychomotor excitement and terror.

In certain types of delirium, due to alcohol, there may be present other characteristics, auditory or other hallucinations predominating over the characteristic visual hallucinations of typical delirium tremens; thus, the patient may be very active and threatening in his attitude and responses to imaginary voices which speak to him in a defamatory and frequently obscene way. Nearly always, these voices are projected to outside and remote points, associates and others in his immediate vicinity not being implicated by the patient in the supposed origin of these irritating and upsetting hallucinations. At other times foul and poisonous odors are thrown into patient's room and he attempts to defend

himself against these imaginary attempts on his life. Again a variety of the so-called "occupation" delirium may be met under the acute alcoholic deliria, in which there is no element of terror, and the classic picture of delirium tremens is absent, but in which the patient is completely clouded and hallucinated, projecting himself into his customary drinking haunts, calling for cigars and drinks, greeting boon companions and living through an imaginary drinking bout. Usually this experience, as denoted by the patient's attitude, is of a normally social and pleasant character, but at times there is quick change to irritation in response to quickly changing hallucinations of a possibly unwelcome and unpleasant nature.

While the more acute alcoholic deliria are usually characterized by exaggerated psychomotor response, leading frequently to extreme activity and constituting the typical "busy" delirium, there are many lesser or subacute delirious manifestations as a result of prolonged poisoning by alcohol. Frequently these subacute delirious states supervene after the more active delirium tremens has subsided. The patient may appear to be in a dream world, lying quietly, but distracted, giving his attention to strange visions or sounds which come to him, no element of fear or irritation being noted. These dream-like hallucinatory deliria may in turn lead over into the typical Korsakoff psychosis, characterized by clouding of the sensorium, marked memory defects, and a tendency to free confabulation to fill in the memory gaps. Later the clouding of consciousness with its delirious significance may subside, leaving the patient still with his memory upset and fabricating tendencies.

The duration of these deliria varies, as will be understood from the occasional tendency of one type to succeed another. Usually, however, when no such complication follows, a delirium tremens attack runs its course in from one to two and sometimes three weeks. The subacute deliria are of longer duration and sometimes last for one or two months, and in turn may be followed by other psychoses not in the nature of delirium.

Among the purely drug psychoses occurring in this group, cocaine is the common habituation attended by delirium which we meet with in local psychiatric practice. It is the general belief that morphinism is attended by hallucinations and phenomena of a delirious nature; but in point of fact chronic morphine habitua-

tion, uncomplicated by cocaine or alcohol, is not usually attended by either hallucinations or delirium. Owing to the frequency with which one or both of these narcotics are taken in connection with morphine, however, it is not rare to meet with deliria of a composite toxic origin. Occasionally morphine habitués use atropin in order to counteract certain effects of the narcotic, and we encounter a temporary hallucinatory delirium of short duration in connection with morphinism apparently on the basis of the acute atropin poisoning. The prolonged use of cocaine alone, however, will unquestionably produce mental symptoms in the nature of an active hallucinatory delirium. Visions and voices of threatening nature trouble these sufferers, and irritation and angry denunciation of imaginary persecutors often render these individuals dangerous to society because of the active efforts to rid themselves of their tormentors. One of our cases secured a revolver and shot through the walls and ceiling of his room in order to protect himself from his hallucinatory persecutors. The most characteristic feature of cocaine delirium is said to be the peculiar cutaneous sensory change leading to the impression of living insects crawling underneath the skin. Usually this delirium is of very short duration when the drug is withdrawn, a few days to a week witnessing the clearing up of these acute mental manifestations. Lead poisoning, in addition to the physical symptoms which are so highly characteristic, occasionally sends a case to our wards, presenting mental symptoms of a delirious character. These hallucinations are usually in the visual and auditory fields and do not present distinguishing characteristics.

While the infections-exhaustive and toxic groups embrace the greater number of the acute deliria occurring as primary psychoses, we meet with delirious episodes in a number of psychoses in which they constitute but minor features. Of these the delirium of hysteria has special characteristics in the nature of a longer or shorter episode of mental clouding with dream-like hallucinations, the character of which is apt to be particularly fantastic and bizarre. An attack of hysterical insanity may be ushered in by such an episode of delirium in which the patient may be quite actively excited, but turning to religious and other emotional experiences in her elaboration, accompanying which are prominently noted turning movements, contortions, rigidities

and other postural phenomena which commonly give to the case diagnostic desiderata.

In epilepsy we meet with a variety of delirious phenomena from the mildest to the most extreme grades. The most common delirium of epilepsy is probably noted in post-convulsive automatism, in which the patient following his seizure fumbles with his clothing, unbuttoning same, partially disrobing, moving chairs about, sometimes assaulting those who come into his vicinity and otherwise temporarily misconducting himself, his sensorium and consciousness being completely clouded. These dramatic incidents are usually transient, and consciousness returns within a few miutes, but sometimes they are prolonged indefinitely, patient being credited with so-called "dual personality," in which long journeys or senseless wanderings may be undertaken without subsequent ability to recall anything that has occurred from the onset of the convulsion. Again, following, or taking the place of, an epileptic seizure we often witness the wildest and most frenzied delirium which may be encountered anywhere within the confines of psychiatry, the patients writhing and twisting, fighting actively, striking blindly at the wall, throwing themselves about bodily and regardless of personal injury, until shocking mutilation of person, perhaps with fractures of bones, may occur. This frenzied delirium may and often does constitute one of the causes of death in epilepsy. In other epileptic mental states of aberration with pronounced memory disturbances there is noted a condition of delirious confusion with tendency to elaboration of fictitious occurrences on the part of the individual, closely approximating the Korsakoff mental syndrome.

Chorea is not rarely attended by mental phenomena which in certain cases deepen into well-marked delirium, death being a frequent termination in such psychoses. This delirium in our experience is particularly liable to develop in young adults. The choreic movements become extreme and appear to be in large measure responsible for the exhaustion which precedes the delirium and renders the prognosis in these cases so grave. Patients, from having been moderately clear, with the increase in severity of the chorea proper, begin to show partial clouding of the sensorium: they soon come to talk at random: poorly defined hallucinations develop: they scream, toss themselves about, often falling to the floor if not carefully looked after, refusing food, whining

and snivelling or actually crying in the most peevish fashion. They are irritable and assault impulsively.

In general paresis we frequently meet with a certain particularly rapid development of acute symptoms in the nature of delirium. This delirious form of the disease is of very rapid course, the patients usually being in a wildly excited state, laboring under extreme psychomotor pressure. Visual and auditory hallucinations are common. Patients observe the most beautiful visions of heaven and of angels coming to pay them tribute; see troops of soldiers which they are to command; hear the voice of God putting them in charge of the world, all their hallucinations and ideas being of the wildest and most expansive character, and under the influence of which they carry on a busy, sleepless and exhausting activity. Similar episodes of delirious excitement may develop in general paresis of more prolonged course, which with the convulsive and apoplectiform seizures constitute the crises of the disease. These delirious outbursts are not necessarily fatal, but are always exhausting by reason of their intensity.

Senile insanity often presents a rather characteristic type of delirium, spoken of as "delirium of occupation." Patients so afflicted exhibit clouding of intellect and complete abolition of grasp and power of attention. They project themselves backward to the scenes of youth or early life, or to former business activities, and under the influence of vivid hallucinations of sight and confused delusions are pushed forward in a continuous and exhausting pressure of psycho-motor activity. They are sleepless and the delirium is markedly accentuated at night, many of these cases exhibiting delirious phenomena only during the night hours; while during the day they become fairly clear and appreciative within the limits of their customary deteriorated mentality. Under the pressure of this "delirium of occupation" patients leave their beds, pull and tug at their bedding, wander about the room, carrying any articles on which they can lay hold, picking, throwing shoes, bedding, dishes, etc., into inconglomerate piles. They talk in response to hallucinations; drive cattle; order thieving boys from their orchards, attempting to chase them therefrom; and give themselves up completely to imaginary occupation of this sort. Other patients no longer recognize sons or daughters or husbands or wives, but believe themselves to be children playing truant at school or executing under the direction of

parents long since dead. Old men and women of foreign birth in this state are transported to home scenes in their native countries. Frequently this delirium is continued to the point of exhaustion and death. In other types of senile cases there are annoying hallucinations of all the special senses, particularly those of sight and hearing. These patients do not display the motor activity of the characteristic "occupation delirium," but are irritated and annoyed, responding in vehement and vituperative fashion to the incriminating accusations of imaginary tormentors, whom they frequently see and address by name. These hallucinations are apt to be vivid, often indicating a quickly terminal state; in fact it is common in psychiatric practice within our hospitals for the insane to receive large numbers of senile cases who are sent to the hospital during these terminal deliria, whereas with appreciation of the significance of the delirious symptoms on the part of the family physician, such cases could have been provided for at home for their brief period of existence of a few weeks, and the family thus spared the chagrin of having their relative die within the walls of a state hospital.

Still other senile deliria of milder types occur episodically, in which the patients are hazy, not markedly hallucinated, restless and wandering about the ward aimlessly, fussing abstractedly and requiring oversight, but still able to dress themselves and to respond in vague, confused fashion to direct and insistent requests. Usually these states last but a few days, giving way to the usual senile mental complex of deterioration, only to recur at longer or shorter intervals. Frequently on admission some of these cases of senile insanity exhibit transient delirious symptoms seemingly on the basis of auto-intoxication and defective elimination from bowels and kidneys. These patients usually have dry, coated tongues and one or two degrees of temperature. Attention to free elimination clears up delirious manifestations established on this basis.

Among the organic psychoses, embracing cerebral arteriosclerosis and brain syphilis with resulting apoplexies and apoplectiform phenomena, brain tumors, cerebral abscess, central neuritis and locomotor ataxia, we meet with delirium of variable characteristics. While there may be wild, active and exhausting outbursts leading to fatal termination, the most common observation is that of moderate haziness of the sensorium, transient ill-

defined hallucinations usually of visual character, occurring irregularly and nocturnally with vague apprehensive restlessness, or a delirious involvement of the mentality expressed in a tearful, whining maudlinism which continues uninterruptedly for several days or weeks. In the organic states, owing to the progressive character of the disease, these delirious symptoms are apt to recur or continue till death terminates the scene.

Insanity due to trauma, likewise, may present delirious manifestations quite similar in variety of expression to those of the other organic deliria. Memory for recent events, as in senility and definite brain disease generally, is greatly interfered with in all these states, and in practically all of them we sometimes,—in fact quite often,—observe delirious confusion, bearing a decided resemblance to the Korsakoff mental syndrome of "tendency to supply the breaks in memory by the narration of fictitious incidents, usually dealing with imaginary personal activities."

Since the days of Hippocrates medical literature contains more or less definite reference to a form of mental aberration bearing a striking similarity in certain particulars to the type seen in infectious diseases and characterized by an acute onset of severe somatic disturbance. This has been described under the terms of acute delirium, Bell's mania, phrenomania, acute delirious mania and collapse delirium. The disease is of serious character, consisting of wildly delirious activities continued to the point of exhaustion, complete intellectual and sensory clouding and frequently intensification of all these phenomena to the point of coma and death. Various authors incline to somewhat different prognoses, but all agree that the disease is serious and most admit that from 40 to 50 per cent. die. There is little doubt that a variety of quite similar deliria of unusual intensity of symptoms, but with frequently diverse, though poorly understood etiology, have been described under these various appellations. In former years, with the looser tendency to characterize nearly every excitement of whatever name or nature as maniacal, it is not surprising that these intense and so frequently fatal deliria were also included under this term. In recent years, with the more strict limitation of the term mania to the manic-depressive group, as studied and outlined by Kraepelin, the necessity for more careful analysis in these delirious cases has been felt, with less and less disposition on the part of psychiatrists to admit any close

relationship between so-called acute delirious mania and manic-depressive insanity. With the clinical methods of today in various fields of medicine, including the more careful analysis of mental symptoms as such, we are now able to separate out and assign to other recognized groups (notably the infectious-exhaustive group), the larger proportion of these peculiar fulminating forms of deliria. While we still meet with cases of obscure etiology, to which the term collapse delirium is applied by modern writers, nearly all, including Kraepelin himself, content themselves with the merest reference to an acute fulminating form of delirium occurring in the course of true manic-depressive insanity. It is our belief, however, from careful observation of a series of these delirious cases during the past five years that more stress should be laid upon the occasional occurrence of such a type of delirium occurring in the manic-depressive type of psychoses. It must be admitted that the cases described as collapse delirium and those which might be more properly embraced under the term acute delirious mania are quite similar in the full development of their delirious features, but it may be pointed out that the etiology is apt to be quite different and that the one rises spontaneously in neuropathic individuals following emotional shock and worry, without other definite train of psychotic phenomena; while the other follows, or is the outgrowth and distinct progression of, a typical case of readily recognizable manic-depressive insanity.

In our study of these forms of acute delirium occurring in the Rochester State Hospital during the five-year period extending from October 1, 1904, to September 30, 1909, there were admitted on original certificates to the institution 1,510 cases, of which 233 cases were classed under the manic-depressive group, and of these nine cases presented conditions of acute fulminating delirium, in each instance attended by death in from one day to six weeks. In eight of these cases death came in less than two weeks.

The classical picture of collapse delirium and acute delirious mania, if we may be permitted the proper use of this latter term, may be quoted from one of the recent authors:[2]

"Following a few days of insomnia and restlessness there develops very rapidly a condition of motor excitement with

[2] Clinical Psychiatry—abridged edition of Kraepelin's Lehrbuch, by Defendorf, November, 1902.

clouding of consciousness, dreamy delusions and hallucinations; the orientation is quickly lost; everything about the patients are changed—they are no longer at home, but are among enemies and thieves, in cathedrals, in heaven and beneath the earth. Numerous illusions and hallucinations appear; the designs on the carpet assume the form of threatening figures; gas light appears like the sun; neighbors are passing to and fro, and they hear beautiful music; cars rush by; their own name is called out and troops approach. They become noisy and talkative. The content of speech shows great incoherence, sometimes with a flight of ideas, many alliterations, rhymes and repetitions, which are as often sung as spoken. . . . The motor excitement is very pronounced. Patients remove their clothing, race about the room, overturn furniture, pound the door, throw the bedding out of the window and try to get out themselves; they are destructive and untidy. Very often they indulge in the most reckless and impulsive movements, their whole activity seemingly lost in a mixture of confused impulses. They prattle away incessantly, sometimes in a whisper, now at the top of their voice, and again gesticulating and clapping their hands. The attention cannot be attracted. Questions asked are rarely answered. Orders are not obeyed. On the other hand they almost always exhibit a purposeless resistance to everything, even to bathing and dressing."

Some authors call attention to certain physical characteristics which are in accordance with our own observation, namely, the frequent presence of anorexia, nausea and vomiting, peripheral disturbances in sensation, at times painful areas over the site of some internal organ, particularly in the cardiac and epigastric regions. Gastro-intestinal disturbances are generally pronounced, often the nausea and vomiting becoming so obstinate that no food can be retained; in some cases unusual temperature elevation to 106° and in one of our cases to 108°. During the acme of the delirium the patient often gives every appearance of an individual suffering from a severe toxemia. The face has a peculiar, drawn appearance; the complexion is shallow; the eyes somewhat sunken; the tongue thick and coated; and as the motor restlessness becomes greater there seems to be considerable difficulty in articulation. In our cases there have been noted frequently tympanites and tenderness over the abdomen unrelieved by treat-

ment, speech degenerating to an inarticulate babbling, and death intervening from exhaustion.

Owing to the danger of developing this paper to an undesirable length, it will be impossible to discuss the special features of our entire group of cases. For purposes of contrast between what may be termed classical collapse delirium of the authors and the fulminating form of delirium supervening in the course of manic-depressive insanity two cases of the former and three of the latter types have been selected.

In the following two cases of collapse delirium attention is called to the manner of development with initial intellectual haziness, rapidly passing over into characteristic delirium, in the absence of any suspicion of infectious process, and apparently on the basis of extreme worry and emotional shock reacting on sensitive, finely organized, but distinctly neuropathic, mental constitutions.

Temperature changes occurred only with other terminal symptoms of collapse during the last one or two days of illness, and this fact must be borne in mind as characteristic of this entire series, so that these delirious phenomena are in no sense properly classified under the febrile deliria. Several writers have described micro-organisms in the blood of these patients, and Wells, in the January, 1911, issue of the *American Journal of Insanity*, has isolated an unidentified diplococcus from the blood of a case described as delirium grave. Blood and cerebrospinal fluid cultures should certainly be made in all these cases, but in those studied by us, as has already been remarked, they have been separated out from others manifestly belonging to the infectious-exhaustive group because of the entire absence of clinical symptoms suggestive of any infectious process. Post-mortem findings in these cases are practically negative so far as any specific or common lesion is concerned. In several of our series the pia has been found rather markedly injected at autopsy, but neither purulent nor serous exudation has been noted; there have been no adhesions, no thickening of the membranes, nor other sufficient evidence of meningeal inflammation to justify such thought; while the logical explanation of our findings would appear to be the intensity of the cerebral excitement with quickly resulting exhaustion and pial congestion. In the last analysis, also, the abdominal distention and tympanites with, sometimes,

extremely high temperature might be construed as symptoms due to infection, but again it is urged that they are undoubtedly terminal symptoms occurring usually during the last twenty-four or forty-eight hours of the delirium; and in view of the nausea, projectile vomiting, atony and distention of the bowels, with deepening stupor, probably point directly to the intensity of the cerebral process in the nature of profound shock and collapse.

(*To be continued*)

SCLEROTIC FOCI IN THE CEREBRUM OF AN INFANT

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The following case presents some points of interest:

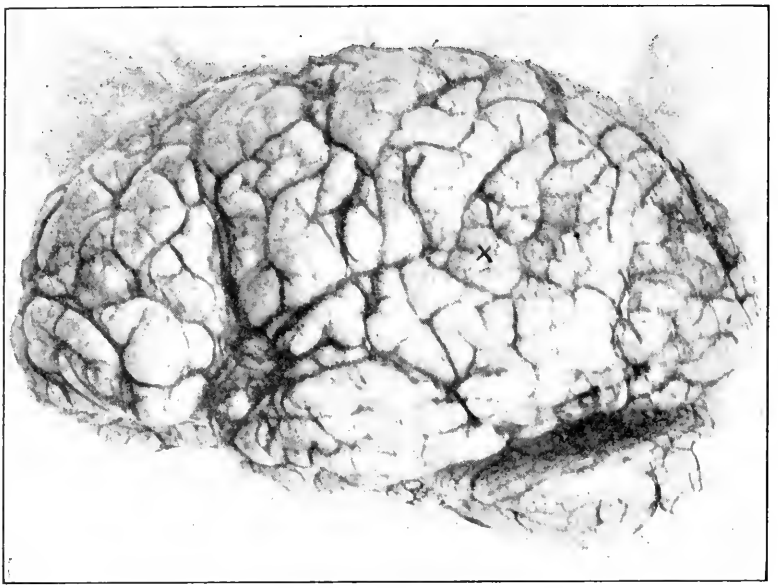
Case No. 2,149, D. D. S., a male infant of twenty months age, was admitted to the Colony on April 20, 1907. The mother suffered from rheumatism and the paternal grandfather died from "lung trouble," but otherwise the family is said to have been free from questionable conditions.

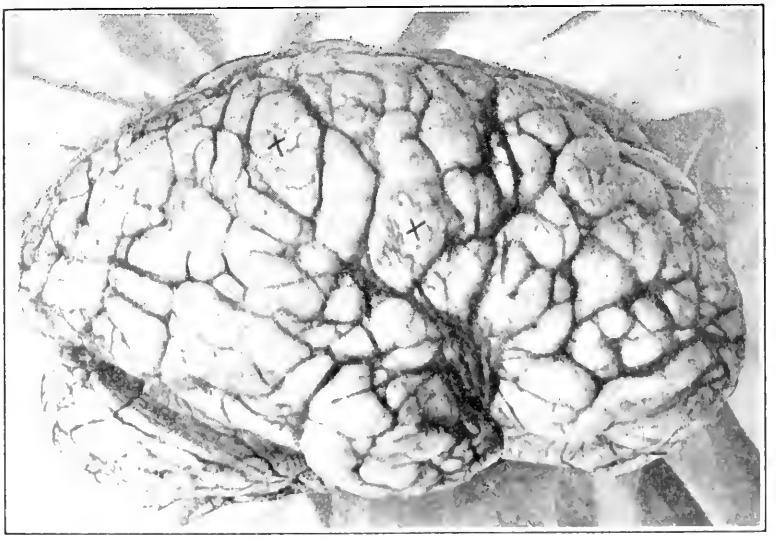
The pregnancy from which this child was born is said to have been normal. The labor was instrumental, but the child was not injured in delivery. He weighed eleven pounds and was a strong baby. He is said to have had crying fits, and dentition, which set in between four and five months of age, was severe. At this time, a peculiar "nervous" contraction of the right arm was noted several times a day. He also had "starts" or "night-terrors."

The attacks are said to have changed from twitchings of the arm to "spasms" of the stomach, in which the patient drew in his abdomen, the head pitched forward and a cry was uttered. He did not seem to lose consciousness. Eight or nine of these occurred daily till four teeth came through together; then the spells became less in number, but there was a corresponding increase of nervousness. The mother noticed that in the last attacks there was first a "stare" and "heavy breathing"; consciousness was apparently lost for about a minute. The patient sometimes slept after attacks. He had not learned to walk, though there was no apparent paralysis; speech was limited to "Papa" and "Mamma." There was no history of any infectious disease. The above is from the history and admission sheets.

Examination at Colony.—The general condition presents nothing of interest. Pupils are dilated and react well; no nystagmus. Neurological examination is made difficult by the age of the patient, but the sensory and motor functions appear normal. No tremor is noted. Mental condition appears to be slightly enfeebled as compared with normal infants. He makes unsuccessful effort to walk and says only "Mamma," "Baba." (Notes by Dr. Shanahan.)

Later History.—During his residence at the Colony, up to his last illness, there is little of interest to report. He learned to walk but did not increase his vocabulary. Only one petit mal





FIGS. 1 and 2. Lateral Views of Cerebrum.

seizure is recorded up to the day before his death. (Notes by Dr. Parker.)

Last Illness.—On the 16th of November, 1907, he was ill, with constipation and elevation of temperature to 104 deg. F., pulse 70, respirations 24. The bowels were moved and on the 17th his condition was improved, but that afternoon, about three, it was noted that the abdomen was distended and tympanitic. Later, he had a typical grand mal seizure, this being followed by several minutes of twitching of the facial muscles and later by hiccough. At 8:30

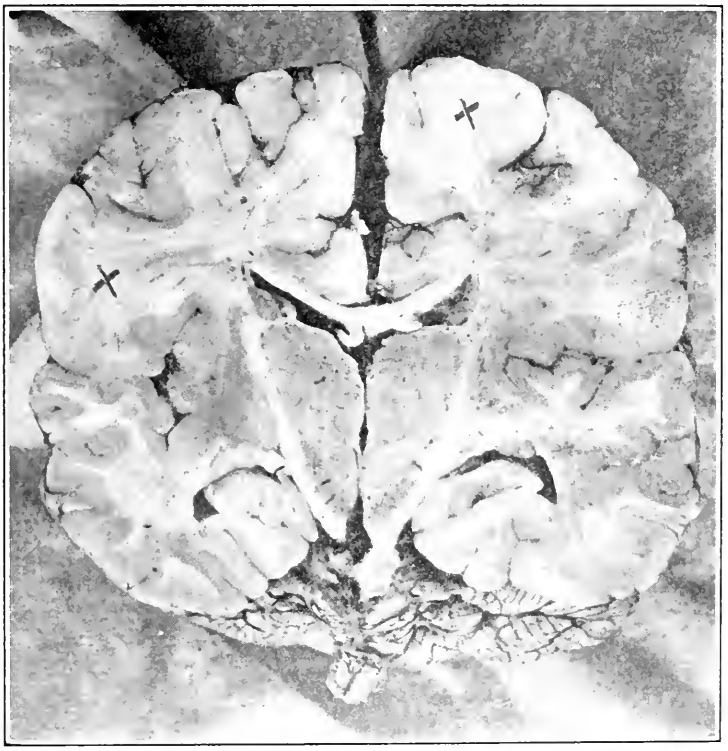
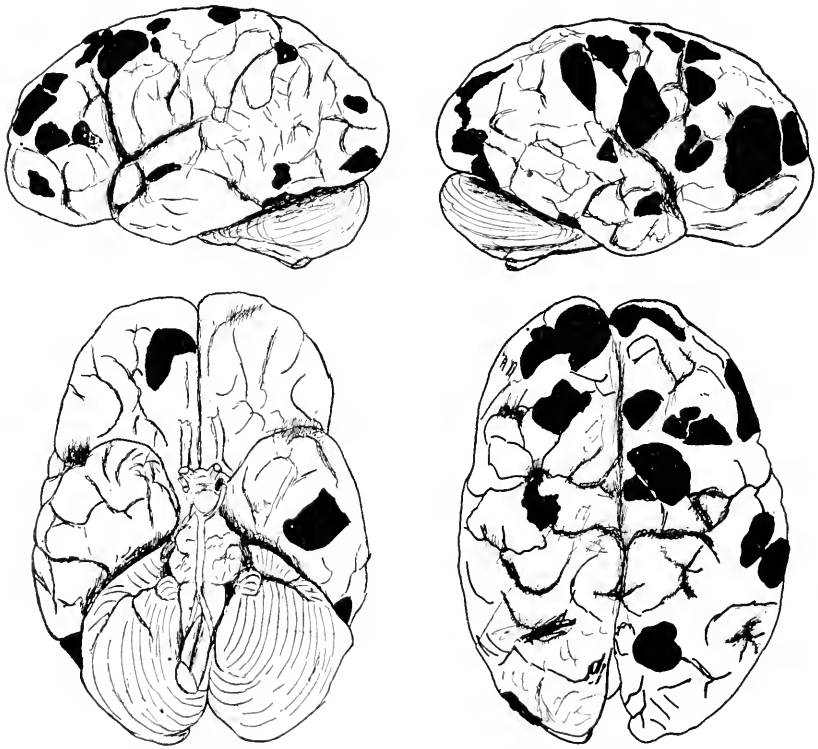


FIG. 3. Cross Section of Cerbrum, Showing Two Sclerosed Foci.

P. M., he went into continuous clonic convulsions, involving the right side of the face and the lower jaw. The tongue was deflected to the right and the head and eyes to the left. Pupils were quite widely dilated and equal. Temp. 104.8 deg. F., P. 140, R. 60. Cardiac second sound inaudible. General status set in at ten P. M. and involved muscles of face and of both the upper and lower extremities and were most marked in the flexor muscles of the right thigh and leg. Cheyne-Stokes respiration developed and death occurred at one A. M. of the 18th. (Notes by Dr. Parker.)

Autopsy.—The brain only was available for examination. Scalp, calvarium, and dura negative. Brain weight, 1,270 g. Throughout the cerebrum are foci of hardening corresponding in outline to single convolutions or to groups of convolutions. These are much harder than the intermediate cortex, and in places seem so hard as to be almost "bony" to the touch. The cerebellum escapes.

These foci are to be recognized in the accompanying photographs only by a somewhat cauliflower appearance of the surface over them and in the actual specimen differ but little in color from



FIGS. 4, 5, 6, 7. Topographical Drawings Showing the Cortical Distribution of the Scleroses.

surrounding parts. The meninges above them are not affected and there is no elevation above the other convolutions. On section through one of these masses, the white matter is seen to be somewhat whiter and is broader and coarser in its outlines than that in normal parts. The cortex is also distinctly whiter in color than that of the remainder of the brain. The areas are quite easily to be picked out from these characteristics. The appear-

ance of the foci and their topographic distribution is shown in the accompanying protographs and drawings.

Sections were stained only according to the Weigert method for myelin sheaths. This stain shows that in the sclerosed areas the myelin sheaths have entirely disappeared. It is regrettable that neuroglia stains were not also made. A careful examination, however, of the Weigert stains shows the shadowy forms of pyramidal cells in the cortex above these areas, and of glia nuclei in them.

We have in this case an infant of twenty-seven months who presented clinically only seizures and possibly slight mental enfeeblement, in whom at autopsy widely distributed foci of sclerosis were found throughout the cerebrum. The case has been spoken of as one of disseminated sclerosis and it perhaps fits closest into this category; but it is interesting to note that true multiple or disseminated sclerosis is of rare or doubtful occurrence during the first decade of life. Schupfer reviews the literature (*Monatssch. f. Neurol. u. Psych.*, Bd. XII, S. 60 and 89) on this phase of the subject and selects a total of fifty-eight cases, together with one of his own, which he considers eligible for examination under the heading of infantile focal scleroses. Of these he eliminated all but three cases, in which he includes his own, which were demonstrated by autopsy. He believes that multiple sclerosis in infancy is of possible but exceedingly rare occurrence, though he admits that the symptoms of adult cases may sometimes be traced back to extreme youth.

Müller, in his extensive monograph ("Die Multiple Sklerose des Gehirns und Ruckenmarks," Fischer, Jena, 1904, pp. 8 and 14) calls attention to the primary and secondary scleroses as described by Schmaus and Ziegler. The secondary types are those following luetic, arterio-sclerotic or toxic infectious conditions to which the sclerosis represents a reparative process. The primary form is best described as multiple gliosis. Müller believes infantile focal sclerosis, parallel in type to the true disseminated (primary) sclerosis of adults, does not exist; but he modifies this by saying that it is apparent that the initial lesions of multiple sclerosis may frequently be traced back to early life.

Gaenlinger collected, in 1909, a total of eighty-five cases of so-called infantile sclerosis (*Ann. d. Méd. et Chir. Infantiles,* Vol. XIII, pp. 145 and 180. Abstracted in the *Jour. Am. Med. Assn.*, Vol. LII, p. 1,367) and concludes from his analysis that in none of them was the diagnosis of true multiple sclerosis justified.

The occurrence of attacks of an apoplectiform character, sometimes severe but more often mild, and epileptiform attacks, is recorded not infrequently in the discussion of the disease. Müller places the occurrence of these at one per cent. for the severe, and twenty to twenty-five per cent. of cases for the mild, apoplectiform attacks, while attacks of epileptic character occur in from three to four per cent. of the cases.

Edwin Bramwell saw only one example of apoplectiform attacks in 150 cases and quotes Frankl-Hochwart as observing only ten instances of apoplectiform and three of epileptiform attacks in 206 cases. (Osler, "Modern Medicine," VII, p. 156.)

What shall be the diagnosis in this case? On the basis of the anatomical findings, it comes very close to the group of true multiple scleroses, though it is a question whether this diagnosis should be accepted in the absence of nervous symptoms other than those which brought the diagnosis of epilepsy. The value of the case and the certainty of the conclusions is of course lessened by the fact that the age of the patient prevented adequate examination and by the limitation of the autopsy to the brain alone. Possibly, had the patient lived, symptoms would have developed indicating the nature of the disease, but on the basis of the facts at hand, the writer feels that he is justified, on anatomical grounds, in placing the case with the true multiple scleroses.

Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY

December 5, 1911

The President, Dr. L. Pierce Clark, in the Chair

RECOVERY AFTER REMOVAL OF A LARGE BRAIN TUMOR

By Charles A. Elsberg, M.D., P.D.

Dr. Elsberg presented a patient from whom he had removed a large glioma of the left parietal lobe. The operation was done at the New York Neurological Institute. Prior to that time the patient was in stupor, with distinct weakness of the right leg and arm, and right facial weakness of the supranuclear type. There was decided astereognosis in the right hand, and very slight papilledema. A diagnosis of tumor in the left supramarginal convolution was made, and the patient was referred to the Surgical Department from the service of Dr. Joseph Collins.

Dr. Elsberg made a long, osteoplastic flap, incised the dura, and found a cortical tumor, about five centimeters in diameter, occupying the supramarginal area and extending backward. The tumor was fairly well limited and could be peeled out of its bed with little difficulty.

The patient recovered rapidly after the operation. All of his symptoms disappeared excepting the astereognosis, but even this was much improved.

ENDOTHELIOMA OF THE CAUDA EQUINA

Dr. Elsberg presented a patient from whom he had removed a tumor of the cauda equina six weeks before. The patient entered the New York Neurological Institute in the service of Dr. Collins with a history of pain over the sacral region, and increasing loss of power in the lower extremities. He had the characteristic symptoms of absence of knee and ankle jerks, double drop foot, reaction of degeneration in the peronei, and irregular sensory disturbances in the lower limbs. The tumor proved to be a large endothelioma around the nerves of the cauda equina, and was removed in two stages.

EXTRA-MEDULLARY TUMOR OF THE DORSAL CORD

Dr. Elsberg also showed a patient from whom he had removed a glioma of the dorsal cord. When the patient was first seen by Dr. Elsberg, her only symptom was pain on the right side of the abdomen. For this pain she had been under treatment for a number of months, but without obtaining relief. A careful examination showed that she had sensory and motor disturbances in the lower limbs, and that the pain was a root pain of the twelfth dorsal nerve root.

After laminectomy and incision of the dura, a large extra-medullary tumor was removed by Dr. Elsberg. Over this the twelfth right dorsal

root had been found tightly stretched. The operation was done two months ago. The patient had entirely recovered, and was now perfectly well and free from all symptoms.

In connection with the two cases of spinal cord tumor, Dr. Elsberg presented a large number of tumors which had been removed by him during the past two years at the New York Neurological Institute. Four of these specimens were very large growths removed from around the nerves of the cauda equina, and the speaker made especial reference to the fact that endotheliomata of the cauda equina presented a very characteristic clinical picture that should be recognized early. He also showed specimens of extra- and intra-medullary growths of the spinal cord that he had removed by operation. Dr. Elsberg laid particular stress upon the importance of the early recognition of spinal new growths: with early operation, the results should be excellent. He did not consider laminectomy done on a patient in good condition as a very dangerous operation.

Dr. I. Abrahamson, who had seen the first case reported by Dr. Elsberg, said the interesting feature in that case was that the irritative level corresponded to the twelfth dorsal, while the level of sensory disturbance, etc., corresponded to the sacral cord. The operation was advised at the irritative level, and the lesion was found there.

The last patient reported by Dr. Elsberg was an inmate of Mt. Sinai Hospital for one week, and then left that institution contrary to advice and before the X-ray examination was concluded. The diagnosis made there was spondylitis (?) or tumor of the cauda equina. The X-ray plate, which was subsequently completed, showed no evidences of spondylitis. Massive tumors of the cauda equina were uncommon, and the speaker said this was the first that had come under his observation.

Dr. Joseph Collins said these cases should call our attention anew to the fact that the diagnosis is, unfortunately, oftentimes not made until after structural changes inconsistent with functional restitution have taken place. It would seem to be abundantly proven that the surgeon can remove spinal cord tumors, and that the patient tolerates the removal extremely well. The question is, are we sufficiently familiar with the early, and what we may call non-classical symptoms to say to the patient that a tumor exists and to the surgeon where it is?

The patient that was shown last by Dr. Elsberg had been under treatment constantly for two years in various hospitals and health resorts, chiefly for sciatica, rheumatism, lead neuritis and flat feet. Only a few days before Dr. Collins saw him he had returned from a hospital where the diagnosis of spondylose rhizomylique had been made. The mode of onset, the course of the symptoms and particularly the occurrence of double sciatica of varying intensity, the unilateral peroneal paresis and the sensory disturbance seemed to him very characteristic of a slowly growing tumor in the region from which the growth was removed. This case paralleled two others which the speaker had seen at the Neurological Institute, and which would soon be published in detail.

Regarding the man who had a tumor removed from the left supramarginal gyrus, Dr. Collins said the case illustrated the fact that brain tumors could be easily removed, and that apparently the patient may make a full and complete recovery. There are times in the experience of every one who has to do frequently with cases of tumor of the brain when it is easy to think otherwise. As a matter of fact, the truth is that very few tumors of the brain are so situated that they can be readily removed, and

it must be admitted that spinal cord surgery presents a much more promising field than brain surgery.

OPPENHEIM'S NEW DISEASE

Dr. Joseph Fraenkel presented a paper on "Dystonia Musculorum Deformans." (*To be published in this Journal.*)

Dr. Charles L. Dana, in opening the discussion, said he would not attempt to criticize, in any way, the views of Oppenheim, nor contradict the theory he had advanced regarding the pathology of his cases, because one could not, from written description or pictures, diagnosticate them with the surety of the person who had actually observed them.

Of the cases reported by Dr. Fraenkel, the speaker said he was most familiar with the one spoken of first, which had also been under the observation of Dr. Leszynsky and Dr. J. Ramsay Hunt. In that case there was a tonic and clonic coördinated spasm which was certainly the exact analogue of the clinical picture of the type of spasm to which had been given the name of torticollis. In cases of this kind, which he felt should be put in the category of the torticollic or tic group, and to which the French had given the name of mental tics, the movements must have a cerebral origin.

There were two groups of interpreters of these cases: those who thought the cerebral cortex was perhaps most involved, and a second group, who were inclined to believe that the chief disturbance lay in the neighborhood of the red nucleus and the associated parts which controlled those movements.

Dr. Dana said that while in England last summer, he saw Sir Victor Horsley thrust a needle through the cerebellum of a cat, and produce torticollic movement.

Speaking of the pathology of this disorder in general, Dr. Dana said he thought that perhaps it was not quite the same in all cases, but he felt very certain that there was a group of degenerative clonic-tonic tics, affecting either one side or both sides of the body, which possessed, approximately, a similar pathology, and differed only in the group or groups of cerebral neurones affected.

Dr. V. P. Gibney, referring to one of the cases mentioned by Dr. Fraenkel, said he first saw this patient through the kindness of Dr. Leszynsky. In that case, various orthopedic measures were tried without appreciable benefit. He had kept the patient under observation for several years, and was interested to hear Dr. Fraenkel's report of the later outcome of the case. As to the pathology of these cases, Dr. Gibney said, he could add nothing to what had already been brought out.

Dr. Richard B. Kruna said that Oppenheim refused to class these cases under the heading of convulsive tics, but failed to give any reason for doing so; yet, after a not inconsiderable amount of observation of such cases, the speaker could not see how dystonia musculorum might be differently diagnosed. Dr. Joseph Fraenkel's suggestion to call the affliction tortipelvis seemed a happy analogy to the term torticollis for the similar tic affliction of the neck.

Of interest in Oppenheim's article was the fact that wherever changes in the condition described were observed, they were due to some psychotherapeutic effort. The same important experience, important from the etiological and therapeutic viewpoint, the speaker had in his cases of

localized or general convulsive tic. The case referred to by Dr. Fraenkel as markedly benefited under Dr. Leszynsky and Dr. Kruna's care corresponded fully with the cases described by Oppenheim under the new name. During a rather close observation of this case, extending over more than five years, the speaker watched one circumstance as the permanent one in the course of the affliction, in contrast to the protean character of its many other manifestations, namely, the congruence between the patient's psychic and physical states. Mental calm accomplished by therapeutic talk gave marked improvement of the physical disorders, the one lasting as long as the other, while for instance the dejectedness of the patient, when he had failed to secure a position and was taken into a charitable institution, was accompanied by deterioration of muscular equilibrium. This case, under proper division of labor and rest, good food and air, some psychotherapy and motor reeducation, if its economic difficulty had properly been cared for, should have given and still would give, with reasonable certainty, the desired result. The speaker hoped to have sufficiently emphasized, in these remarks, that the muscular symptoms were but secondary, while the psychic anomaly was primary.

Dr. William M. Leszynsky, referring to the boy whose case had been reported by Dr. Fraenkel, and who for a time had been under his own care, said he was surprised to learn that the improvement had not been permanent. The speaker said he could never forget the peculiar attitude of the patient when he first came under his observation, as he had never seen a similar case. From the first, he was impressed with the fact that there was considerable simulation, and exaggeration of symptoms, that the boy had contracted the habit of getting into these grotesque positions, and that impression was strengthened after he had had him under observation for several weeks, when he practically made a complete recovery. There was no evidence of any organic trouble.

Subsequently Dr. Leszynsky said, he had a recurrence, and returned to the hospital in the same condition as he was originally: if anything, the symptoms had become more pronounced. He was ultimately referred to Dr. Gibney for orthopedic treatment. The boy was influenced more by psychotherapy than by anything else. One remarkable feature in the case was that the rigidity entirely disappeared when he was in the recumbent position.

Dr. Smith Ely Jelliffe said that while in Berlin two years ago, he saw the three patients described by Ziehen, and which are mentioned in Oppenheim's original paper. They certainly presented very striking features, different from anything known before. The marked lordosis, the peculiar tonic and clonic spasms, the variable condition of the knee jerks and the different reflexes, and particularly the fact that the motor phenomena came on the moment that volitional movements were undertaken; these all make a remarkable picture. Some of these patients show very little when quiet, but the moment that volitional impulses are started, these peculiar phenomena commence. Oppenheim at one time referred to the similarity that these cases bore to Huntington's chorea. He later spoke of them as cases related to athetoid movements, and called them idiopathic athetoses.

In this connection, Dr. Jelliffe said, he had in mind a patient, now at the City Hospital, a negro, who showed the characteristic phenomena described by Oppenheim, including involvement of the muscles of the mouth and neck, just as the patients of Ziehen show. In this particular

case he was inclined to believe that he had to deal with an old cerebral diplegia, but the usual neurological signs of a cerebral diplegia were not demonstrable.

From the nosological standpoint, Dr. Jelliffe felt a regular series of transition cases could be established, which on the one hand showed definite athetoses, and irregular movements, with or without other signs of organic involvement, as in the negro just cited, while the other is the class of cases which Oppenheim describes. If we assume an anatomical lesion, he was inclined to believe that it would be found in some portion of the cerebello-thalamo-cortical arc, probably cortical to the red nucleus, and possibly in the regions of H_1 and H_2 of Forel's field. This localization had received a certain amount of confirmation in the work of Jelgersma of Amsterdam in his study of Huntington's chorea and paralysis agitans, and in the work of Winkler and his students on paralysis agitans. Dr. Jelliffe noted his own contribution to the localization of these movements read before the American Neurological Association in 1911.

In his opinion, the fact that psychotherapy had helped these patients was not a valid argument on which one could base the belief in their purely functional nature. No patient had yet been cured, but then the psychotherapy was not the searching psychoanalysis required if these were to be considered hysterical. Furthermore, it is a well known fact that many organic disorders are much assisted by the hopeful optimistic attitudes and attention given them, as outlined by Dr. Kruna in multiple sclerosis, tabes, paralysis agitans among them. That some of these patients of Dr. Fraenkel's were almost cured by psychotherapy therefore does not prove their functional character. Dr. Jelliffe did not contend that Oppenheim's cases were not of a purely psychic origin, but he held that there are so many transition forms between these and plainly organic cases such as those already cited by him, and even dementia præcox cases, that a more searching analysis of the red nucleus, thalamic and cerebellar syndromes is highly desirable.

Dr. Joseph Collins said he did not see how it could profit us to take a class of cases with which we had been familiar for many years, it was now ten years ago that he had published the history and photograph of one of the cases described by Dr. Fraenkel to-night, and bestow upon them such a name as dystonia musculorum deformans. In what respect is that name superior to tic or tortipelvis, which he understood is the name that Dr. Fraenkel says he suggested some years ago? Oppenheim, in presenting this so-called new disease, furnishes us with no new theory regarding it, nor does his description of it advance our conception of what this extraordinary disorder is. These cases, Dr. Collins said, had been of their own knowledge for many years, and until some more lucid conception of what the disorder really is, was forthcoming from the person who presumed to present it as a new disease and under a new title, we should not even attempt to discuss it in that light.

Dr. Collins said we had a certain conception of what was meant by the tic neuroses, of which mental torticollis was a type, and he did not think that there was any remarkable deviation in these cases described by Oppenheim from descriptions that embodied a portrayal of the tics.

When a person essays to describe a new disease, or to name an old one, some theory of the pathogenesis of the disorder, some conception of its morbid physiology, or some statement of its relationship to other disease or disorder should accompany such effort.

Dr. Foster Kennedy said he had in his possession a number of photographs of cases which bore a strong resemblance to the description of the condition described by Dr. Fraenkel. Those patients were regarded by neurologists of large experience as cases of advanced tic. It was perhaps difficult to say just what a tic was. It had been described as a purposive movement, the purpose of which had been lost. When this movement was continued without reason, it became a chronic bad habit, became exaggerated and might extend over a large part of the body. One of his photographs showed a young man whose body was completely curved on the pelvis, with the muscles in a state of spasm. In the recumbent position, all these muscles were relaxed and quiet, but on attempting to rise, the body again became twisted. That patient had distinct hysterical stigmata and had been cured by suggestion.

Dr. Kennedy said that while he was unable to say whether the cases he had seen corresponded exactly with those described by Oppenheim, they certainly bore a strong resemblance to them, and he agreed with Dr. Collins that a little more justification seemed necessary before presenting this disorder as a new disease with a long sounding name.

Dr. Fraenkel, in closing the discussion, said he thought that most of us would admit that Oppenheim occupied a high position as a clinical teacher, and if Oppenheim was willing to state that dystonia musculorum deformans was one of the most remarkable disorders that he had ever encountered, it certainly must be remarkable. Furthermore, Dr. Fraenkel said, the rarity of the disease was worthy of note. Personally, he had only met with four cases, and all of these possessed certain essential characteristics which fixed them in a class by themselves. They were all characterized by a permanent deformity about the pelvis and by tonic and clonic myospasms of the musculature about the pelvic girdle.

As to the presence of an anatomic lesion in these cases, the speaker said that while a deficiency in the motor area was possible, yet personally he could not identify such a widespread constitutional disorder with a constant, causative anatomic lesion, and he could only emphasize his assertion that a disease possessing so many individual and remarkable features deserved further clinical study. This could best be begun by individualizing the condition.

AUTOPSY FINDINGS IN EPILEPTICS

By J. F. Munson, M.D.

Dr. Munson presented a paper on this subject, in which he gave a summary of the results of their autopsy service at the Craig Colony. The material on which the report was based consisted of the entire autopsy material of the colony, and numbered 317 cases, in which the brain was examined 305 times and the trunk 252 times. In certain cases, under the autopsy law, they were permitted to examine only the brain.

From both the anatomical and clinical standpoints, diseases of the lungs were the leading cause of death: pneumonia was found in one-third of the cases, tuberculosis in one-sixth, and pulmonary edema in about one-tenth of the cases, so that over one-half the deaths were due to diseases of the lungs, either directly or indirectly, a figure which seemed to be considerably in excess of the corresponding figure for the general or non-epileptic population. Status epilepticus, serial seizures and even single attacks predisposed to a pulmonary congestion which might rapidly

pass into an edema and cause death within a couple of hours or even more rapidly. The edema most commonly ushered in a pneumonia. The occasional finding of food in the trachea in seizure deaths reminded one of the frequent vomiting which took place after seizures, and showed the manner in which some of the pneumonias were undoubtedly brought about. In institution practice, they had come to regard pulmonary edema as the most serious of the non-convulsive complications of epilepsy.

Epilepsy itself, either in the form of status epilepticus, series, single attacks or epileptic mental disturbance with exhaustion, was one of the causes of death in about 35 per cent. of the cases. The findings in status and in series had been of negative interest, as they had not differed from what was ordinarily reported. They had had a considerable number of deaths from single seizures, and these were of interest, as the frequency and importance of the condition were not always rightly estimated, and as the organs in such cases might be expected to show conditions as they were in or shortly after a seizure. Rarely did the autopsy show any cause for death in cases where there was clinical reason to believe in the occurrence of a seizure, other than pulmonary edema, general congestion of all organs, dilatation of the right side of the heart and edema of the subarachnoid space. Chronic renal changes were common, and the lymphadenoid system was in many cases more abundant than normal. The ductless glands had been systematically examined, and aside from failure to find more than two parathyroids in most cases, there was nothing striking to note. The pituitary very often showed widely dilated blood spaces, and not infrequently connective tissue between the acini of the pars glandularis, in which portion colloid was also occasionally seen. The accumulations found in the lower portion of the digestive tract confirmed the necessity for the eliminative treatment so commonly ordered.

Of the 305 brains examined, 179 were reported as showing gross lesions of some sort. Twenty-six were reported negative, and the remaining 100 showed minor change. Hemi-atrophy, sclerosis of one temporal lobe, and ventricular dilatation were the most common conditions, aside from hydrops and meningeal thickenings. The relation of these to birth injuries and encephalitis associated with infectious disease was referred to by the author of the paper. He also mentioned a group of cases which came to autopsy which they had termed "low temperature" cases. In these, there was an agonal fall of temperature of marked amount, reaching in one case to 73° F. at death. These cases showed no uniform pathological condition, but most of them gave evidence of some infection, if only a chronic enteritis.

Dr. Charles B. Dunlap said that his own experience in actual autopsy work upon epileptics was limited, but that he had had the opportunity of examining about fifty brains of epileptics, sent by the various New York State Hospitals to the Psychiatric Institute, after the brains had already been fixed in formalin. His data further differed from those of Dr. Munson in that insanity was in all of these cases; moreover this material had been more or less selected, the gross lesions to a considerable extent having been the determining factor in sending it.

In fifteen of these fifty cases, no distinct lesions were found, while the remaining thirty-five presented lesions which might have been influential in determining the epileptic attacks. These lesions, as in the cases reported by Dr. Munson, consisted often in a reduction in the size of one or the other of the cerebral hemispheres, and this was usually observed in cases

where the epilepsy dated from birth or early childhood. Another occasional finding was a rudimentary or absent corpus callosum, also belonging with the congenital type, while softenings and tumors were more likely to be found in cases where the epileptic attacks had developed later in life. Small optic thalami, unless associated with a small hemisphere, were not at all frequent, only one or two such cases having been observed.

The distribution of the lesions was very varied; the left hemisphere was the seat of trouble thirteen times; the right twelve times, and it happened that more lesions were found behind the central fissure than in front of it. In four cases tumors were found which probably were important in bringing on the epileptic attacks, which attacks had lasted for a number of years. The tumors were found in the falx cerebri, fourth ventricle, and in the temporal lobe.

As to finer studies of the nerve cells Dr. Dunlap said the cases had not been especially favorable for that, owing to the fixative, and he had no conclusions to offer.

The speaker said that in considering the causative value of the lesions for the epileptic attacks, he had tried to exclude traumatic lesions where the injury to the brain had probably occurred as the result of the epilepsy; these patients, owing to their frequent falls, were very likely to suffer injuries of this kind, especially in the region of the temporal lobes.

Dr. Thomas P. Prout said that while he had not recently taken the opportunity to review his work at the Hospital for the Insane at Morris Plains, his recollection was that his autopsies there upon the epileptic insane showed gross lesions of the brain in a very considerable proportion of cases: roughly speaking, perhaps 75 or 80 per cent. showed something in the way of gross lesion. He was unable to say what these gross lesions in the cerebral substance had to do with the epilepsy, and we should not fail to distinguish between those cases where these lesions simply furnished the soil upon which the epilepsy was engrafted, and those which were the result of the epilepsy. Such conditions as idiocy, infantile cerebral paralysis, etc., simply furnished a favorable soil for the development of epilepsy, and we could not look upon such lesions as having anything more than an indirect connection with the epilepsy. On the other hand, meningeal changes, edemas and minor atrophies of the cortex were to be looked upon, in the speaker's opinion, as the result of repeated epileptic seizures.

Dr. Edward D. Fisher said he did not consider a case of hemiplegia with epileptic seizures as a case of true epilepsy, and the same was true of epileptic convulsions occurring in connection with brain atrophy or cysts, or after injury or an encephalitis following an acute febrile condition. Those patients might have epileptic seizures, but they were not cases of idiopathic epilepsy. What we were hunting for was the site of the epilepsy in those cases and what changes had been found in such cases. In an article on the subject published in the London *Lancet*, September 30, 1911, by Dr. William Alexander, the writer reported that he had invariably found edema beneath or in the pia-arachnoid, causing an edema of that part of the brain, which might become more or less permanent, and he suggested the introduction of an aspirating needle to relieve the tension. What the cellular conditions were in such a case of idiopathic epilepsy, Dr. Fisher said he did not know.

Dr. Jelliffe said he thought Dr. Munson had already answered Dr. Fisher. The fact of the whole matter was that there was no such thing

as idiopathic epilepsy. Dr. Munson's study showed this. The great amount of work that had been done in the last ten years also showed it. There had been a gradual reduction in the cases of so-called idiopathic epilepsy. First, large lesions were found; then smaller ones, then minute ones, then microscopic ones. Tissue edemas and chemical alterations explained the rest, and the figment of an idiopathic epilepsy had vanished into thin air.

Dr. Fisher said that whether we used the term idiopathic epilepsy or essential epilepsy was of secondary importance; the point he wished to bring out was that there were cases of epilepsy without any history of tumor or injury, and where there was no known etiologic factor, and those were the cases where it would be interesting to discover the true cause of the epilepsy.

The president, Dr. Clark, said that in his study of a considerable number of cases of epilepsy, he had the particular idea in mind of isolating the so-called essential epilepsies from those which were really of the Jacksonian type, although masked as true epilepsies. Two weeks ago he thought he had found a case in which the presence of an organic lesion could be excluded, but when Dr. Alfred S. Taylor exposed the brain he found a lesion of the dura, the arachnoid was somewhat congested and the cortex itself was somewhat whitened.

Dr. Clark said that until we could find some more accurate means of diagnosis, we could not go so far as to say that epilepsy was a functional disorder, nor could it be taken out of the region of organic diseases.

Dr. Munson, in closing the discussion, said that judging from the cases that came under their observation, they had arrived at the conclusion that there were probably no epileptics that were normal mentally; practically all were deficient to some degree.

It would be desirable, Dr. Munson said, to have at our command a better classification of epilepsy than was contained in the terms idiopathic and symptomatic. In order to arrive at a more rational classification, a further study of this disorder was necessary, along lines analogous to those that had been carried on in psychiatry for many years. There was probably no case of epilepsy for which some cause did not exist, although it could not always be found; and that this cause, while manifested *through*, might not *belong* to the cerebral cortex.

The term "idiopathic epilepsy" was simply a confession of our ignorance.

Dr. Munson said that his paper was intended only as a record of the findings at the Colony.

PHILADELPHIA NEUROLOGICAL SOCIETY

NOVEMBER 24, 1911

The President, Dr. ALFRED REGINALD ALLEN, in the Chair

Drs. I. Leopold and S. Leopold presented "A Case Resembling Friedreich's Ataxia in a Boy Five and a Half Years of Age, Onset Acute."

Dr. Charles K. Mills said that of course this was not a case of Friedreich's ataxia, but it was extremely interesting and it seemed to him to have been one of those cases of poliomyelitis attacking the cerebellum and then having a recrudescing attack. In Dr. Mills' studies in polio-

myelitis a year or two ago he had some cases which he reported in which after the first attack there was a second in a week or two weeks or three weeks or even more. A similar train of events seemed to him the most probable explanation of this case. Dr. Mills said he did not know whether fever was present in the second attack. This should have been the case if the second attack was a real recrudescence. Of course it is well known that a cerebello-rubro-spinal type of poliomyelitis has been described. The case could not be regarded as any form of spinal ataxia. The case was extremely interesting and he thought the prognosis might be more or less hopeful. Why the child should have become so demented he did not know. Deafness, if present, is hard to explain. It may be due in some way to disease of the cerebello-auditory system.

Dr. William G. Spiller said he thought that poliomyelitis was becoming so much a subject of study that we were in danger of classifying too much under that head. Diphtheria may produce a symptom complex similar to that reported by Drs. I. and S. Leopold.

Dr. Mills said that he might make an addendum to his remarks on the case of Dr. Leopold as the result of something called out by the remarks of Dr. Spiller in reference to diphtheritic cases. One of the most interesting cases which he (Dr. Mills) had ever seen was many years ago—a case of post-diphtheritic ataxia and bulbar paralysis. The child was extremely ill and was in danger of death from respiratory involvement. Some facial and pharyngeal paralysis was present. The child when first seen was apparently about to die. Dr. Mills, dipping a towel in hot water, with this beat upon the child's chest. Respiration was stimulated and the child recovered. The child was very distinctly ataxic afterward and had other long continuing symptoms of post-diphtheritic paralysis.

Dr. F. X. Dercum said he was thoroughly in accord with the view that this case was probably due to an infection, but with Dr. Spiller he felt that we should be a little careful as to classifying the case with poliomyelitis. It seemed to Dr. Dercum, also, that the child's pupils were very large and that ought to be taken into consideration. The child had become demented and this would seem a justification for regarding the process as not limited to the cerebellum.

Dr. I. Leopold said he could not enlighten the members of the Society very much on the case. The child had three distinct infections. One in 1909. He had a frightful attack of scurvy. After that in 1910 he had a severe attack of whooping-cough. In the attack on July 14 in the afternoon he had the ordinary febrile attack which suggested a disorder of the stomach and was well the next day. This child was brought to Dr. Leopold's office on the 9th of September. When Dr. Leopold saw him his first thought was that he was suffering from a post-diphtheritic paralysis and his first examination was of the throat and nose, and there was absolutely no evidence of diphtheria. The child had a perfectly clean nose and throat and Dr. Leopold then examined his eyes, and on that day there was reaction to a light thrown in by a concave mirror and his reaction to accommodation looking at the finger or a pencil was very slow. The reaction to the ordinary light, a match or candle, was very active. There has been no change in the fundus and Dr. Leopold said he had seen it twenty times since the boy's illness. Only last week, Dr. Leopold had watched the boy going up the street after he left his office and he was then not only ataxic but drawing his heels up and drawing his toes in. Now he is better and has been better in the last few days and while

apparently his mentality is very much diminished he is very imitative. Dr. Leopold said that if he endeavored to examine the boy's eyes the boy knew what Dr. Leopold wanted to do. First he would shut one eye and bye and bye he would let Dr. Leopold examine his eyes. He expresses his wants as to going out and as to things to eat, and pronounced his words a little bit more plainly than he did. Dr. Leopold did not think the boy's condition was as bad as it was a week ago. As to what the infection was, that, he said, was unknown. He was sorry to see the case put down on the program as a case of Friedreich's ataxia. He and Dr. S. Leopold thought some of the symptoms were those of Friedreich's ataxia. A Wassermann reaction was made and was negative. The patient had been taking steadily syrup of hydriodic acid, but it had been stopped a week or two before the Wassermann test was made.

Dr. Allen asked whether he was right in understanding Dr. Leopold to say that at the time this boy's eyes would not react to the light in an ophthalmoscopic mirror, they still reacted to daylight.

Dr. S. Leopold said he thought the subject had been pretty well discussed. When he first saw the case he was puzzled whether to consider it an acute disseminated sclerosis or an acute encephalitis with a predilection for the cerebellum. He thought the case was hopeful and though he could not demonstrate it the ataxia was less; also the child's speech had improved during the past month. In regard to Dr. Allen's question, the eyes were tested with the ophthalmic mirror and then tested with a match and the pupils contracted.

Dr. S. Leopold presented "A Case of Circumscribed Polioencephalitis."

Dr. Charles K. Mills said that the patient presented had come to his service at the University Hospital and had attracted his attention as one of unusual interest. He lectured upon the child a day or two after she appeared and then had her admitted to the hospital for the purpose of study. The case is exceedingly interesting not simply because it is one of circumscribed cortical or cortico-subcortical polioencephalitis of the type of Strümpell, but also because of what Dr. Leopold has recorded in regard to the eyelid, and of one or two things which he forgot and which are equally important—the child flushes on the left side and not upon the other and she does not sweat upon the side on which she flushes as upon the other. Her mother reported this without leading questions, although he had not been able to find any evidences of perspiratory abnormalities. At the time of his examination she was not perspiring at all. As to the pathology of the case, Dr. Mills thought it was a cortical or subcortical case, although at first sight it was difficult to explain the symptomatology. Of course the patient may have had two lesions. This case brings up the subject of cortical and other cerebral vasomotor and secretory centers. It also brings up the subject of the cortical control of palpebral and ocular movements. In these directions as in others the case is of much scientific interest.

Dr. S. Leopold said that few of these cases come to necropsy. The only type which does come to necropsy is the Wernicke type, the polioencephalitis superior hemorrhagica. One other feature Dr. Leopold said he failed to mention was the question of the trophic changes. There is a decrease in the size of this limb and in the musculature. There is a dryness of the skin on the right side, and the mother states that the child never sweats on this side.

AN UNUSUAL CASE OF PALSY OF THE SEVENTH, THE MOTOR BRANCH OF THE FIFTH, THE FOURTH AND THE SIXTH NERVES, OF SUDDEN ONSET, ASSOCIATED WITH SENSORY LOSSES SUGGESTING A SYRINGOMYELIC SYMPTOM GROUP; POLIOENCEPHALITIS HÆMORRHAGICA

By F. X. Dercum, M.D.

The following case is of special interest because of the character of the symptoms. Dr. Dercum had never before seen associated in the same case a Bell's palsy and a paralysis of the motor division of the fifth. These together with the other palsies and the associated sensory losses present make the case very unusual.

G. R., age 42, white, married, native of England, motorman, was admitted to the Jefferson Hospital, May 9, 1911.

Family History.—The family history was as follows: His father died at the age of 45 years of tuberculosis. One brother died of miliary tuberculosis. One brother died from smallpox. His mother, five sisters and one brother all living and well.

Negative history of cardiac, renal or malignant disease in family.

Personal History.—No history obtainable of any of the infectious diseases of childhood. Had Neisserian infection twenty-two years ago. Denies history of having had a chancre. Uses both alcohol and tobacco in moderation. Was operated on at the Episcopal Hospital, February 14, 1911, for left inguinal hernia and left the hospital, March 17, 1911.

Was well until May 9, 1911. He had been running a mail car from Frankford to Ninth and Market Sts. He left his car to get a little coffee and as he boarded his car, he went down suddenly. Said he did not stumble, but simply fell. He was put into a mail wagon and taken to the Jefferson Hospital. He himself states that he did not lose his senses but the hospital record says that he arrived at the hospital in a stuporous condition.

Condition on Admission.—Patient is a fairly well nourished adult male.

Presents the following: Loss of motion on entire right side of face, inability to close eye or wrinkle forehead. Mouth is drawn toward the left side. Protruded tongue projects toward the right side. Marked paralysis of the right external rectus muscle. Also some weakness of the left arm and left leg. As far as could be determined there was marked loss of sensation to all forms on the entire left half of the body, i. e., left half of face, left half of trunk, left arm and left leg. There was difficulty in swallowing, he could not void his urine voluntarily and his speech was very indistinct. He stated that the right side of his face felt stiff and swollen while his left arm and left leg felt as though it were stuck full of pins. Was unable to walk and unable to stand. The knee jerk was normal on the right side, absent on the left. Ankle clonus absent on both sides. A Babinski, however, was present on the left.

The pupils were equal and reacted normally. The general visceral examination was negative. The patient vomited freely and was unable to retain food.

The diagnosis of a polioencephalitis was made. A Wassermann test, made May 19, proved negative.

His condition varied but little until May 14, when it was noted that he had regained to a large degree the strength in his left arm and left leg. Sensation also had been in part recovered over the left leg but loss of sensation persisted over the left half of face, left half of trunk and left arm. A gradual improvement as regards the strength of the left arm and leg was subsequently noted. No improvement, however, was noted in the face. By June 12, he was able to sit up in a chair and by June 18 he was able to walk about the wards. Subsequently but slight change was noted in his condition and on July 26, he was discharged from the ward.

An examination of the eyes, made on July 14, 1911, revealed paralysis of the fourth, sixth and seventh nerves upon the right side. The eye grounds were normal.

Temperature upon admission was 98° F. The day following it rose to 98.6° F. On May 10, it rose to 99.2° F. It subsequently fell again; on May 13, it was 96° F. On May 14 it rose to 99.4° F. It continued to fluctuate until May 22, when it remained more or less subnormal, until May 30, when it became normal. During June it fluctuated between normal and 97° F. On July 6, it again rose slightly above normal; it registered 99.2° F. On July 11, it fell to 97° F. On admission the pulse was slow and on May 12 it fell as low as 44, but by May 19 it rose to 88. Subsequently it fluctuated a little about the normal.

Since his discharge from the hospital the man has been in attendance upon the Out-Patient Nervous Department. On October 28, he was again studied by Dr. Dercum. His gait at this time is slightly hemiplegic, there being evidently weakness of the left leg. It is also noted that at times in walking the patient presents a tendency to propulsion. He himself has noticed this and says that at various times he has come near falling. He adds that of late this symptom has become less pronounced. Upon attempting to stand upon the left leg alone, the weakness is more readily brought out. The grip of the left hand is also decidedly weaker than that of the right. There is a marked and complete Bell's palsy of the entire right half of the face. In addition there is an absolute paralysis and extreme atrophy of the muscles supplied by the motor division of the fifth, i. e., there is absolute paralysis and complete wasting of the right temporal and the right masseter. There is also an inability on the part of the patient to bring into play the pterygoid muscles; the inference is therefore justified that the pterygoids have also suffered. The paralysis of the external rectus is still evident though it is much less marked than formerly. The eyeball can be rotated outward, but rotation is only accomplished by a series of jerks. The superior oblique muscle appears to have recovered. An examination by Dr. Hansell shows that there is a paresis of the inferior oblique, insufficiency of external rotation, as just stated, and rotary nystagmus.

The whole of the left side of the face, of the left side of the head and neck, of the left upper quadrant of the trunk and of the left upper extremity, present a decided hypesthesia. This hypesthesia appears to be limited by the middle line of the body, extends down to a horizontal line about five inches below the scapula in back and about five or six inches below the nipple line in front. In this area tactile sensations can be perceived, but they are perceived much less distinctly than upon the opposite side. However, the area just described is absolutely anesthetic to pain and temperature impressions. The pain and temperature sensations

are entirely lost. In addition the patient states that the left arm aches a great deal and he is obliged to support it with the right hand. Both the right and left hands are somewhat cold and livid but this is especially marked in the left hand and left upper extremity generally.

There is present no sensory loss upon the lower half of the trunk and there are no sensory losses in the legs.

Dr. Hansell noticed that the right cornea is roughened and slightly opaque in its inner quadrant but that otherwise the media are clear and the fundus healthy. Pupils react to light and accommodation, although the left pupil is a little smaller than the right. There is no limitation of the fields for white or colors.

Dr. S. MacCuen Smith also made an examination of the patient, but his examination was negative save that he thought there was a general reduction of bone conduction of the entire head, the symptom being very much more marked on the right side. He also came to the conclusion that the aerial conduction was very much less on the right side than that on the left side. There was, however, no deafness of moment.

The patient swallows normally and the tongue is now also protruded in the middle line. An examination reveals that there is no loss of the sense of taste. There is also no anosmia.

The association of paralysis of the motor division of the fifth with paralysis of the facial nerve is in Dr. Dercum's experience unique. He has not changed the diagnosis made when the patient first entered the hospital, namely that of a polioencephalitis. There can be little doubt that there was involvement of the nucleus of the facial, of the motor nucleus of the fifth and of the nuclei of the abducens and of the pathetic, and to a slight extent even of the third. There was also, if we take into consideration the difficulty of swallowing, an involvement of the nucleus or nuclei of the glossopharyngeal, possibly also of the hypoglossal as there was distinct deviation of the tongue. It would appear also that the lesion had involved an adjacent portion of the fillet, had thus given rise to the sensory losses observed and which at first involved the entire left half of the body and which loss appears to have been to all forms of sensation. Subsequent to admission there was an improvement in the involvement of the glossopharyngeal, of the pathetic and abducens and also some recovery on the part of the fillet, but the nucleus of the facial and the motor nucleus of the fifth have evidently been permanently destroyed.

Dr. Mills said that the case of Dr. Dercum was very much like one now under his care. It was unlike the case just reported in some details but was somewhat like it in the method of onset and most of the symptoms. In his case Dr. Mills after vacillating opinions as to diagnosis between polioencephalitis, tumor and thrombosis, had concluded that the case was probably one of infectious bulbar polioencephalitis. The onset was somewhat rapid with fever, after which there was improvement and then recrudescence. The patient was in a very critical condition for a week or two and then she began to improve. Her early and residual symptoms included the following: Total paralysis of the left side of the face; paralysis of associated ocular movements to the left; paralysis of the motor fifth on the left. She had on the right impairment of the senses of pain and temperature, but these were not completely lost. She had also some true paresis of the right motor. The knee jerks were exaggerated with a Babinski response on the right. She had some ataxia in the left upper extremity. She had some change in her voice due to

laryngeal involvement and slight difficulty in swallowing. This patient greatly improved, but she still has marked facial paralysis and loss of control of the ocular movements with diplopia.

Dr. Andrew H. Woods presented a paper with the title "Segmental Distribution of Fifth Nerve. Two Case Reports."

Dr. William G. Spiller said the subject of the distribution of the branches of the trigeminal nerve had been of interest to him for many years. The cavity in Dr. Woods' case did not go into the pons and yet there was a loss of pain and temperature sensations in the forehead, which would seem to confirm the view that the upper branch of the trigeminal nerve has the lowest representation in the spinal fifth root. From several investigations, experimental and others, which Dr. Spiller had helped to carry on, he believed that the peripheral branches of the trigeminal nerve are sharply represented in the Gasserian ganglion, and to a considerable degree also in the spinal root of the fifth nerve. Dr. Spiller agreed with Dr. Woods that the spinal root of the fifth nerve contains merely pain and temperature fibers and that the tactile fibers decussate very soon after entering the pons and brain.

Dr. Charles K. Mills said that he could corroborate what Dr. Woods had brought out. Studies of this kind backed up by necropsy were of course of the greatest importance. Dr. Mills agreed with Dr. Spiller in the view that in the Gasserian ganglion there was a separation of the representation of the roots of the three divisions of the fifth nerve. In the same way the nucleus and sensory root would be separated into several parts. When the Gasserian ganglion is thought to have been extirpated by the surgeon this is not always the case. It is only rarely fully extirpated. When the sensory root of the fifth is thought to be entirely cut this also is not always the case. His statements were borne out by some investigations of anesthesia after operation which he had made, when a portion of the Gasserian ganglion was not extirpated, and a part of the sensory root was not cut it would usually be found that the second branch, or rather the portions of the Gasserian ganglion or sensory root related to this branch, had been successfully operated. In conclusion Dr. Mills said that he wished to congratulate Dr. Woods on his excellent work. His going to the orient would remove from Philadelphia and the University one of its best neurological workers, but what would be our loss would be China's gain.

PRIMARY DEGENERATION OF THE PYRAMIDAL TRACT

By Alfred Gordon, M.D.

After a historical review of the subject Dr. Gordon pointed out the fact that there are very few records in the literature showing a degenerative condition strictly limited to the pyramidal tracts. In the majority of cases the posterior columns and direct cerebellar tracts, also cells of the anterior cornua are involved. Alongside the rare cases Dr. Gordon places his own, which corresponds to the clinical picture of spastic paraplegia, as described by Erb and Charcot. Pathologically an exclusive involvement of the crossed pyramidal tracts was found. No trace of a lesion was found in any other tract of the cord, medulla, peduncles or internal capsule. A careful search for a diseased condition of the cells through the entire cerebro-spinal axis was equally negative. The degeneration

was observed only in the crossed pyramidal tracts in the entire cord and its upper limit was at the level of the decussation in the uppermost segment of the cervical portion. Clinically the patient presented a typical picture of spastic paraplegia of 20 years' duration. Dr. Gordon discussed the pathogenesis of the affection and arrived at the conclusion that very probably the disease belongs to the abiotrophies on the order of Friedreich's ataxia, syringomyelia and others. An interesting etiological element in Dr. Gordon's case is the history of a persistent and prolonged exposure to cold. The patient worked in an ice plant since the age of 12 and at 16 the first symptoms made their appearance. He died at 34.

CHICAGO NEUROLOGICAL SOCIETY

December 20, 1911

PRESENTATION OF A HISTORY AND A BRAIN OF A CASE OF HYPOPHYSEAL DISEASE

By Geo. McBean, M.D.

Miss S. E. K. Age 36. Refused to give history as it might prejudice diagnosis.

Condition March 14, 1910. Height 5 feet 10 inches, weight 160 pounds. Eyes rather prominent, left pupil larger than right. Right eye convergent, outward rotation limited. Vision right 10/10, left 8/10. Some metamorphosis in both eyes. Choked disc + 1 D right, + 2 D left. Fields slightly contracted, color fields partly overlapping, natural blind spot slightly enlarged. Post nasal examination shows small polypus in right nares coming from interior of sphenoidal sinus, which was found diseased, a tentative diagnosis of optic neuritis secondary to nasal sinus disease with paresis of the right external rectus muscle, an operation advised.

March 16 at operation the sphenoidal sinus was found packed with polypoid mass, curetted, and examined. Considered carcinoma and granuloma by different men. Vision and diplopia much improved. After making the diagnosis the patient gave the history which had been previously refused. She had had amenorrhea for eight years without apparent cause, and had gained about fifty pounds in the first year. About August, 1909, she had had an acute rhinitis, and all the symptoms had apparently dated from that time. The diplopia of recent development was the most annoying symptom. There was history of frequent, transitory glandular enlargements in various parts of the body, especially the axillæ. There was also a transient, non-inflammatory edema of the ocular conjunctiva which appeared occasionally and lasted a few hours. Within three weeks after the operation the sinus began to fill up again. Drs. Shambaugh, Brown, Fish and Lewy in consultation urged further operative measures, which were refused. November 18, 1910, patient showed a paracentral scotoma in the left eye, vision r. 6/10, l. 6/5. Mass was projecting from the open sphenoidal sinus. Patient went to California. In June, 1911, patient consulted a physician for severe headaches accompanied by mental disturbances, transitory loss of memory, and increasing blindness. K. I. had a remarkable effect, clearing up the pain at once. February 21 Dr. McBean had a Wassermann test made which was reported moderately positive and the patient was put on larger doses

of K. I. and daily intramuscular injections of mercury. Skiagraphs showed an enlarged sella turcica. Dr. Grinker in consultation made the diagnosis of tumor in the region of the sella turcica with increased intracranial pressure. Patient's vision at the time was further reduced. The form field was not contracted much but the color fields showed a bitemporal hemichromatopsia. The scotomata were larger than in November. The patient was sent to Dr. Cushing in Baltimore, April 19, 1911, from whom the following notes were received:

"There is evidence of a large growth or hyperplasia which has done more than merely occupy the sellar region; which has broken through into the cranial fossa itself, as shown by the general pressure symptoms: Bilateral choked disc +2 r., +3 l.; primary optic atrophy; central scotomata; vision low in both eyes. There is increased carbohydrate tolerance; subnormal temperature for some years; low blood pressure; adiposity; dry skin. No acromegalic facies and no definite bone changes in the hands. Wassermann negative.

"Operation April 20, 1911, sublabial approach, submucous resection of the nasal septum. Removal of large portion of growth from sphenoid sinus and distended sella turcica."

May 17, 1911, she returned to Chicago practically blind from the large central scotomata. During the summer the vision failed completely, from secondary atrophy of the optic nerve. The lapses in memory became more frequent as did the headaches.

She entered the hospital August 10. Headaches became very severe. About September 15 the pain suddenly ceased and the mind cleared remarkably, probably from a leak of cerebrospinal fluid. She was comparatively well for a month, then the pain returned and she died October 20.

The post-mortem by Dr. Chislett showed a large tumor in the sella turcica adherent to the bone, projecting into the sphenoidal sinuses and involving the left lateral ventricle, which it entered from below, not through the foramen of Monro.

PRESENTATION OF THE CASE OF FACIAL PARALYSIS WITH INVOLVEMENT OF THE STYLO-HYOID AND POSTERIOR BELLY OF THE DIGASTRIC

By R. C. Hamill, M.D.

The patient is forty years old, male. Chancre 18 years ago with secondaries, practically no treatment. Six years ago, exposed to the cold, severe pain down the right side of the neck every night for a week then woke one morning with the right face paralyzed. After about three weeks began to improve and about two months after was practically as he is at present. There is paresis of the upper and lower facial branches, no loss of taste on the anterior two thirds of the tongue can be determined. Hearing normal. General examination normal. Thyroid cartilage lies at rest 1/3 in. to the left of the median line. When the patient swallows or talks the excursion seems to be practically vertical. The right half of the tongue is slightly broader than the left and both when at rest and protruded is decidedly lower than the left. It protrudes in the midline.

The spinal fluid showed two cells to the cm., and Wassermann was negative whereas it was positive in the blood.

Translations

THE THEORY OF SCHIZOPHRENIC NEGATIVISM

By Dr. E. Bleuler

Translated by William A. White, M.D.

of Zurich

superintendent of the government hospital for the insane, Washington, D. C.

(*Continued from p. 202*)

In schizophrenia the stimulus from the outside produces quite as easily, negative and positive reactions: The negative suggestibility is pathologically increased. The building up of negative and positive suggestibility goes along, for the most part, hand in hand. Children, senile dements, and other sorts of affective people are under certain circumstances very easily suggestible; they are, however, quite as often stubborn and negativistic against outer influences. Some authors have long maintained that hysterics suffer from excessive suggestibility, while others deny suggestibility from without; and refer it all to autosuggestion. In reality both peculiarities exist side by side; they are only different sides of one and the same element of character. Certainly, the preponderance of protestations, as already mentioned, has, often besides, the significance of a sort of protection against the exaggerated suggestibility.

In schizophrenia especially, Kraepelin has quite correctly brought negativism into relation with abnormal suggestibility, which expresses itself in command automatism. We often see in the same patient negativism and command automatism side by side, indeed the one may pass into the other. Schizophrenics, like children, swing from one extreme to the other. It must be added that these two characteristics do not always occur together. The relation, even in schizophrenia, is complicated in such a manner as to resist reduction to a simple formula. Schizophrenics,

nevertheless, as a whole, in spite of their autistic seclusion from outside, are found to be remarkably suggestible by close examination. Fellow patients who are the ringleaders of a ward find the schizophrenics an easy butt, and for the spiritus loci there is no more delicate reagent for the local color of an institution than the apparently isolated mass of its schizophrenics.

Kleist[21] denies the connection of "negative suggestibility" with negativism. This author has the decided merit of having enlarged upon Wernicke's ideas, of carrying them to their end and presenting them clearly. It is thus a duty to come to an understanding with him. In the first place he cavils at the conception that inhibition should occur in the field of motility as the result of the contrary conception which arises with each idea, constituting a peculiar disturbance in the course of ideation for which brain pathology has no analogy. Here comes out very strongly the difference in methods of investigation. Brain pathology analogies have proved themselves so unfruitful in psychiatry,[22] that to begin with we do not care whether we find them or not. On the contrary we seek analogies in the thinking of the healthy, and then this so characteristic inhibition shows itself to be neither peculiar nor strange. So among the normal many conclusions and actions are stopped in this manner either temporarily or continuously.

Kleist further opposes, that to many ideas there are no contrary ideas, and that a negativistic patient who is requested to pick out the red wools certainly would not choose the green. Here the author confuses the intellectual contrary idea with the affective—the voluntary. We are only considering the latter. Kleist moreover fails to consider that I expressly assume different genetic forms of negativism and designate negative suggestibility as only one of several roots.

Ambivalence.—By ambivalence is to be understood the specific schizophrenic characteristic, to accompany identical ideas or concepts at the same time with positive as well as negative feelings (affective ambivalence), to will and not to will at the same time the identical actions (ambivalence of the will) and to think the same thoughts at once negatively and positively (intellectual ambivalence).

[21] Kleist, Weitere Untersuchungen an Geisteskranken mit psychomotorischen Störungen. Leipzig, Klinkhardt, 1909, S. 97 f.

[22] Cerebral pathology and localization ideas have led so extraordinarily capable an observer and fruitful thinker as Wernicke into sterile by-ways.

In the case of an idea which arouses both negative and positive feelings the difference is not always sharply appreciated even in health, or otherwise expressed, when a normal person loves something or somebody on account of one quality but hates them on account of another, the result is not an entirely unitary feeling tone, either the positive, or the negative outweighing at times.[23] The ultimate conclusions are not necessarily drawn by the split psyche of the schizophrenic. The mentally sick wife loves her husband on account of his good qualities and hates him at the same time on account of his bad ones, and her attitude towards each side is as though the other did not exist.

Ambivalence of the will or voluntary ambivalence is the natural outcome of affective ambivalence. Intellectual ambivalence needs special consideration. It is of course in close association with affective ambivalence in many judgments but not in all. Even from the purely intellectual point of view each thought is in many ways most closely akin to its opposite; not only that the closest association to "white" is "black": each judgment contains the negation of its opposite, and there would be no sense in thinking it unless the contrary had entered into consideration: I can not think and say: "the sky is blue," unless the contrary, that it may not be blue, is, so to say, in the air.[24] Censure of a picture lies psychologically much nearer praise of the picture than any other thought. Children frequently use the same expressions for both positive and negative ideas, for example tü tu for Türe zu (door to) for open and close the door, also "zuletzt" (last) for "zuerst" (first), and later, when they first begin purely in play to judge, they often do not care at all how they express the same.[25]

With the confused schizophrenics the distinction is often completely blotted out. Affective motives also probably cooperate, as in the above mentioned patient, who at the same time censured and praised her husband; but it is probably a purely intellectual fault when a catatonic who after having answered

[23] A normal ambivalent group of ideas is represented by the sexual, especially in women, as stated previously.

[24] "Each idea demands, as it were, a contrary idea as its natural complement." Wreschner, Reproduktion und Assoziation von Vorstellungen, Zeitschr. für Psych. u. Phys. der. Sinnes-O., Ergänzungsband 3, 07/9, S. 505.

[25] Compare also the latin "religio," that was used in both a good and a bad sense, as a blessing and as a curse. Also see van Ginnecken (Principe de linguistique psychologique, Leipzig, 1907), who goes rather too far.

his wife's friendly letter, with an unmotived farewell letter, said, in answer to expostulations: "I could have just as well written another letter, good day or farewell are just the same" (dire bonjour ou dire adieu). So thesis and antithesis in our patients often become so similar as to become confused or even identified one with another.

Ambitendency and ambivalency in themselves bring about only an equalization of correct thoughts and conflicts with their opposites. In negativism, however, these opposites actually gain the ascendant. There are two known reasons for this: In the first place this predilection is certainly often merely apparent. Even the negativistic produces correct thoughts and actions. When, however, among a thousand psychisms in our day only a single one is negativistic it is conspicuous, the probability would be that in the equalization of tendency and antitendency there would be five hundred false to five hundred correct reactions, a proportion which would imply severe negativistic anomalies.

Furthermore the previously mentioned "contradictions with reality," especially autism, take care that the contrary action is favored as much as possible.

Outer negativism is therefore, in the first place, due to a number of factors, which place the patient in opposition to the outer world; the effect of this contrariness can become so extensive because the schizophrenic ambitendency and ambivalency furnish a good soil for it, and above all, remove what in the normal opposes perverse actions.

Ambitendency and ambivalency make inner negativism also somewhat comprehensible to us in some degree, which would not be explainable through other factors which cause negation. When as in will-negativism each impulse is opposed by a contrary[26] impulse, and when the psyche is so split that each of these two tendencies can independently assert itself so that a compromise between them is impossible or is made very difficult, then the antitendency will often manifest itself instead of the tendency. It has not been positively demonstrated that it is just this antitendency which asserts itself with especial frequency. It is, however, probable that such cases occur. They would in some degree be intelligible through the inner disruption in which such

[26] The contrary impulse often consists in the not carrying out of the original intention. From our view point to do something and not to do it is a contrast, just as to do something and to do the opposite.

patients find themselves. They are not pleased with anything, nothing gives them any satisfaction, so it is comprehensible that they seek something else; and that "something else" is very often the opposite.

I believe, however, that there exists besides an unknown factor which gives a special weight to the contrary tendency, not only because the observation of negativistic schizophrenics sometimes appears to point that way, but also because auto-suggestions in the normal are so frequently negative; the menstrual period arrives when it is certainly not expected and vice versa. This factor requires further study.

The cross impulses have very different significance. A part of them are, of course, negativistic. One will not do the desired and so in some cases does the opposite; in others only something else. The apraxiform approximate acts often have the character of acts in emotional confusion under which circumstances the normal make all sorts of errors. Most commonly the cross impulses probably are the result of the specific schizophrenic train of thought in which all at once the nearby association becomes the principle thing; the thought is at once cut off and there is a new one of unknown genesis or at least of insufficient connection with the preceding; or suddenly a quite abrupt thought, an hallucination, an automatic impulse to movement, suddenly arises out of unconscious complexes. It is sufficient only to hint at these things which are self evident to one who knows dementia præcox.

Intellectual negativism resembles volitional negativism very much. When an idea stimulates its opposite and the thought becomes split and unclear, so that criticism is difficult, the antithesis is apt to acquire undue weight, and under certain circumstances replace the thesis. The latter especially because the patients, with their changed feeling and thinking, are often actually compelled to see the thing in an unusual way. Nevertheless, cases like the one previously mentioned, in which each thought compelled the thinking of a contrary thought, give cause for the conjecture, that here preference escapes us as a factor that leads to the contrary thought. Also the dream of the normal, in which many an idea is represented by its opposite, appears to me to point to an active predilection for the negative. Perhaps also the mechanism of wit, which often replaces one thing by its opposite, has a point of contact with intellectual negativism.

It has also occurred to us that inner negativism, especially the intellectual, might express itself in experiments in negative or contrast associations. This conjecture has not been established by proof; we have only seen a striking tendency to contrast association in two patients, and precisely these were not negativistic.

R. Voght[27] on the basis of the views of Lipps, propounds a hypothesis which might explain, in hysterics, how an idea may inhibit precisely the closely related and therefore other to-be-anticipated concepts. I believe the supposed identification of transfer of energy and association therein set forth is too visionary to warrant discussion.

Inner negativism is much rarer in both its forms than outer negativism. This is easily understood after we have seen how much outer negativism is favored by the disturbed relations to the environment, which are constantly present, but favor will-negativism only slightly, and intellectual negativism even less. Negativistic phenomena can not so easily originate, of course, exclusively upon the basis of ambitendency and ambivalency, the predisposing factors of negativism.

[27] Die hyst. Dissoziat. im Lichte der Lehre von der Energie-Absorption. Zentralbl. f. Nervenheilk. u. Psychiatrie, 1906, S. 249.

Note.—Next month a translation of Traum and Mythus by K. Abrahams of Berlin will be begun.

Periscope

Deutsche Zeitschrift für Nervenheilkunde

(Band 42, Heft 3 and 4)

1. Present Status of the Four Reactions. NONNE.
2. Advantage of Using Larger Quantity of Liquor in the Wassermann Reaction. HAUPTMANN.
3. Bornasche's Disease. JOEST.
4. Studies in the Cerebrospinal Fluid. STURSBERG.
5. Pseudo-sclerosis. VÖLSCH.
6. Post-traumatic Spinal Amyotrophy. ACTIVAZATURON.

1. *Four Reactions.*—Nonne reports on the present status of the four reactions, in their behavior to the various syphilitic diseases of the nervous system. He has thus far analyzed 167 cases of tabes, 179 cases of paresis, 97 cases of cerebral syphilis and cerebrospinal syphilis, 68 cases of multiple sclerosis, 38 cerebral neoplasm, and 14 cases of spinal tumor. In syphilis and parasyphilis a more or less high grade lymphocytosis is present. It is greater in the parasyphilitic disease. Lymphocytosis is not a diagnostic sign in syphilis of the nervous system. It is also of no value in differentiating between syphilis and parasyphilis. Phase I reaction is also not a diagnostic sign. It is of value in differentiating between organic and functional diseases of the nervous system. The Wassermann reaction is not a specific reaction in syphilis although it is a characteristic one. It is also present in some tropical diseases, in malaria and in certain stages of scarlet fever. The Wassermann reaction in the blood is also positive in some cases of multiple sclerosis. Its presence in the blood is corroborative evidence of the clinical picture. Its absence does not indicate anything, because 25 to 40 per cent. of tabes, 5 to 20 per cent. of paresis, and 20 per cent. of true syphilis do not show the reaction. In the cerebrospinal fluid it varies with the quantity of fluid used, from .3 to 1 c.c. showing 100 per cent. of positive reaction. The reaction is positive in most cases of paresis when .2 c.c. of spinal fluid are used. But cerebrospinal syphilis and tabes require from .3 to 1 c.c. to produce a positive reaction. Paresis may be excluded from the diagnosis if the reaction is absent in the blood, when the other three reactions are present. His results also fail to substantiate the conclusions obtained by Sarbo, that 24 per cent. of alcoholics give positive reaction.

2. *Wassermann Reaction.*—Hauptmann found that by using greater quantities of the cerebrospinal fluid, positive reactions were obtained in cases of syphilis, which previously gave a negative reaction. He used from .2 to 1 c.c. of the liquor, the other substances in proportion, with a total not exceeding 5 c.c. His conclusions show that this method differentiates between syphilitic processes and other organic and functional diseases of the brain and cord. In cerebrospinal syphilis, he found practically 100 per cent. reactions. By this method, the Wassermann reaction in the liquor in multiple sclerosis was never positive, even though it was positive in the blood.

3. *Bornasche's Disease.*—Joest reports the pathological findings in inflammation of the brain and cord of horses. The microscopic changes are not characteristic. Microscopically it resembles encephalomyelitis in which there is a lymphocytic infiltration. The pathological process has many points in common with other infectious and parasitic diseases of the nervous system. It resembles especially the acute poliomyelitis of man.

4. *Cerebrospinal Fluid.*—Stursberg produced in animals a hyperemia of the neck (Bier's method), to see the effects of increased cerebrospinal pressure upon the elimination of the liquor. It had no constant effect on the flow of the cerebrospinal fluid. He infers from these experiments, that the cerebrospinal fluid is a true secretion and not a transudate.

5. *Pseudo-sclerosis.*—A fourteen-year-old girl previously healthy, with no hereditary or syphilitic history was attacked with spasm-like tremors without loss of consciousness. Later there occurred speech disturbance and mental deterioration. No changes were noted in the nervous system, but the liver was sclerotic and the spleen was enlarged.

6. *Amyotrophy.*—Clinical and pathological report of a case in which the author discusses the question of the non-inflammatory character of the lesions and the true position of this condition among the atrophies.

C. Leopold (Philadelphia).

Allgemeine Zeitschrift für Psychiatrie

(Vol. LXVII, Heft. 3)

1. Katatonic Conditions in Degenerates. R. Kutner.
2. Smallpox Epidemic in Allenberg Asylum. Richter.
3. Blood Examinations in Dementia Præcox. Heilemann.
4. Treatment of General Paresis by Nucleinic Acid. J. Donath.
5. Remarks in Proposed German Criminal Code. O. Juliusberger.

1. *Katatonic Conditions in Degenerates.*—Under the influence of Kraepelin's teachings the idea of intercurrent attacks of mental disturbance, on the basis of degenerative conditions other than hysteria and epilepsy, was largely relegated to the background. The rescue from oblivion of the psychoses belonging to this class and their proper clinical arrangement we owe chiefly to Bonhoeffer. Kutner, basing his opinion upon an experience extending over a number of years, sets out to show that symptoms so like katatonia as to deceive even the most experienced observer may develop as episodes upon the basis of degeneration. As illustrative he describes the following cases.

Case I. A very degenerate habitual criminal, who nearly all his life had gravitated between jail and asylum, up to the age of 20 years had shown no definite mental disease. At this age, while undergoing an imprisonment he developed a condition of severe excitement with terrifying hallucinations and hypochondriacal delusions. To this succeeded an akinetic-parakinetic condition. Without any spontaneity or reaction to external irritants, he kept up constant and monotonous rocking movements of the head and body, was obstinately mute and unclean. Simulation was suspected but etherization failed to cause any change in his condition, so a diagnosis of the katatonic phase of dementia præcox was made. Being placed under different surroundings the patient's condition after eight days showed an entire change. The katatonic symptoms had disappeared and he presented only excessive emotivity with subjective and objective neurotic symptoms. Imprisoned again the next year he soon presented a

similar picture of inhibitory tension so that the prison physician who was unacquainted with his previous history unhesitatingly made a diagnosis of katatonia in an advanced stage. Brought into the asylum he speedily cleared up fully and shortly after made his escape in a cunning and well-planned manner. Again arrested he had an attack of convulsions and passed again into an akinetic condition with great loss of weight, which condition lasted for some time after his admission to the provincial asylum. Here he again appeared to be in a condition of inhibition and had to be fed with the tube. Coming suddenly out of this stuporous condition he again made a very cunning escape. Brought back he showed a number of unsystematized phantastic and hypochondriac delusions. Clearing up shortly he was tried for a number of offenses and sentenced to prison, where he remained for the next three and a half years entirely clear mentally and well behaved. He then suddenly developed hallucinations and delusions of persecution. Brought to the asylum he presented Ganser's symptom-complex, later refused food and emaciated rapidly, was disoriented and had some expansive ideas. Waking suddenly from a condition of apparent apathy he was sharp enough to secure a key and to let out some other patients besides himself. Returned to the institution no intellectual weakness was apparent.

Case II. A man of 34 years of age, who had always lived an irregular life, had been arrested a number of times and was pathologically susceptible to alcohol, to the use of which he nevertheless continued addicted, while in jail after having received a sentence of long imprisonment, developed a condition of confusion which aroused a suspicion of simulation. Brought to the asylum he passed into stupor of extreme degree with stereotypy of manner, negativism, mutism, refusal of food, uncleanliness and loss of weight. A corneal ulcer developed. This condition lasted about fifteen months, then as he was transferred to another institution suddenly disappeared. The constancy and long duration of the symptoms would seem to exclude simulation and in the institution to which he was transferred in spite of the sudden clearing up of the katatonic symptoms, a diagnosis of dementia præcox was long maintained.

Case III. A man of 42 years of age during a period of ten years of observation had presented a regular "pattern card" of psychiatric diagnoses. After an irregular life and repeated arrests, he was taken ill in 1897 with hallucinations, delusions, motor inhibition and stereotypy so that a diagnosis of melancholia cum stupore was made. Brought to the provincial asylum these symptoms had disappeared and on the basis of a number of somatic symptoms, as spasms, exaggerated reflexes, intention-tremor, pallor of the papilla, the diagnosis of multiple sclerosis was made. His symptoms improved so much, however, that in a few months he was sent back to the penitentiary to serve his sentence. In the insane department of the latter institution he showed occasional attacks of a hystero-epileptic nature, but served out his sentence and was released in 1903. Sentenced again for theft, he became disturbed, presented delusions of persecution and ideas of unseen influence so that his case was diagnosed as one of paranoia. In the insane ward he presented the appearance of being somewhat weak-minded, with some psychogenic sensory disturbances, but not insane. Returned again to prison he had hallucinations of all senses and ideas of persecution. Diagnosis of "hallucinatory confusion." Again in the asylum, for three months unbroken the picture was one of severe motor inhibition, total akinesis, mutism, and refusal of food.

This ending suddenly one day he showed a number of phantastic delusions apparently developed upon hallucinations. Diagnosis, chronic paranoia in a degenerate. Brought for the third time to the provincial asylum he was entirely clear and well behaved, so at the end of eight months he was discharged as cured. A few days later he committed a theft and, examined by an experienced alienist, he was declared sane and responsible. Again excited, again transferred for the fourth time to the provincial asylum. For four months akinesis, mutism, negativism, stereotypy. One day, all the symptoms except the mutism disappeared. This lasted three months longer and was succeeded by a condition of weakmindedness apparently congenital. The great similarity between these cases is readily apparent. In each, the attacks began in prison and ended with comparative suddenness. All presented a history and signs of degeneration. The author acknowledges that the question of another psychotic condition arising upon the basis of degeneration must be considered. He thinks however that they must be considered as specific degenerative psychoses, since the usual character of the hysterical psychoses was absent, the picture remained too constant and unvaried, there was little or no amenability to suggestion, affectivity was not apparent and finally and chiefly, because in the free intervals, while the individuals in question showed evidences of psychical inferiority and defect of moral and ethical feeling, the hysterical stigmata were not evident. While the author acknowledges that the question of simulation by these experienced criminals must be carefully considered he considers it impossible that even the sharpest simulant could keep up the appearance of mental disease and escape detection while constantly under the observation of trained attendants and physicians for so long a period, and again the trophic and vasomotor disturbances observed could not be simulated.

2. *The Small-pox Epidemic.*—Contains nothing of special psychiatric interest.

3. *Blood Examination in Dementia Præcox.*—The author made a number of blood examinations upon 150 precocious dements with the following results. The total number of white blood cells appeared in many cases to be somewhat increased. Making a differential count he found that the polynuclear cells were markedly decreased in number in favor of the other forms of white cells, the lymphocytes, mononuclears and eosinophiles being markedly increased in number. In general the eosinophiles occurred in greatest number in the katatonic cases. Attempting to interpret his findings, he can only suggest that a change in the body chemism, possibly some toxine circulating in the blood, may cause the disease. With this idea the blood findings are entirely compatible.

4. *Treatment of General Paresis with Nucleinic Acid.*—Starting out from the observed fact that after acute febrile and suppurative processes, improvement in the condition of paretics is often noticed, the author concluded that the important factors in this improvement are hyperthermia and hyperleucocytosis with increase of oxidation and metabolism, with consequent neutralization or destruction of toxines and improvement of nutrition, and cast about for an agent which would cause these effects without setting up suppuration. This he thinks he has found in nucleinate of sodium. This agent was suggested by Mikulicz to increase the resistance to infection on the part of the peritoneum as a preparation for abdominal operations. Stern found nucleinic acid injections of use in

syphilis, while Pilcz has reported favorable results from the use of tuberculin in general paresis.

The nucleinate of sodium was injected in doses of 0.01 to 0.5 gm. every second day. An average rise of temperature to 38.5 was observed. A sterile solution containing 2 per cent. each of sodium nucleinate and sodium chloride was used. It is best prepared fresh and at any rate should not be over two days old. A count of the white cells was always made before the injections, invariably before the mid-day meal. The number of leucocytes was found as high as 61,000 with a body temperature of 40.5°, the averages were however 23,000 and 38.5°. The maximum temperature was usually reached from 4 to 10 hours after the injection. It returned to normal in from 3 to 5 days. Intravenous injection the author found less suitable than the subcutaneous method. An injection was not repeated until the temperature had become normal again. A five to seven day interval was found in the main suitable. A cure consisted as a rule in from 3 to 18 injections on an average 8 injections of about 1 gm. each. In some cases a tolerance seemed to be reached as shown by stationary temperature and leucocytosis. As the author remarked in a former article upon mercurial injections in paresis, the nucleinic acid treatment is particularly indicated in early stage cases, in which there is no excuse for the physician to stand with folded hands as something may and should be accomplished. Where there are manifest signs of syphilis and where the mercurial therapy has been insufficiently applied, a course of mercurial injections can well precede the nucleinic acid. Nevertheless the flooding the system with mercury in response to a positive Wassermann reaction is justly decried. The author gives in some detail the histories of 21 cases of general paresis which were treated by nucleinate of sodium injections. Of these, in ten cases there was sufficient improvement to permit of the patients going to work again, in five more the patients improved sufficiently to go home without recovery of power to work. The remaining cases remained unimproved. In five of the improved cases having a clear history of syphilis mercurial therapy had been applied, in one, very intensely but without staying the course of the disease. In this case however nucleinic injections at once set up a change for the better. This change was marked by cessation of the tremor, quieting of excitement, improvement of memory and especially by disappearance of the severe dysarthria. Too short a time has elapsed since the beginning of this treatment to decide as to the permanence of the cure, but the author thinks that the results obtained justify a further trial of the remedy, especially since it seems devoid of danger.

5. *Proposed German Criminal Code.*—Of local interest only.

C. L. Allen (Los Angeles).

Monatsschrift für Psychiatrie und Neurologie

(Vol. XXIX, No. 3. March, 1911)

1. System Degeneration of the Commissure Bundles of the Brain in Chronic Alcoholism. E. Marchiafava, A. Bignami and A. Nazari.
2. The Behavior of the Pupils in Acute Alcoholic Intoxication. Experiments with Alcohol in Normal and in Mentally Deficient Persons. Fr. Stapel.
3. The Diascleral Light Reaction. E. Pschedmieisky.
4. Neurosis following Lightning Stroke. K. Krause.

1. *System Degeneration.*—A continued article to be reviewed at its conclusion.

2. *Behavior of Pupils.*—Thirty-four insane patients, mostly those with constitutional defect, and twelve normal persons were the subjects of the tests. The conditions as to age, time of day, quantity of alcohol administered, etc., were made as uniform as possible. The degree of intoxication and its manifestations, of course, varied considerably. The pupils were tested at intervals and in both daylight and dark-room. The following conclusions are reached: Acute alcohol intoxication causes dilating of the pupils to an equal degree, perhaps after an initial narrowing; inequality or change in shape were not observed. The adaptation of the retina to altered light is interfered with (abolished or delayed). The reaction of the pupils to light, accommodation and convergence is slow. The extent diminished. The slower reaction may precede or follow an increased reaction; difference in reaction of the two eyes was not observed. The reaction to sensory stimuli and psycho-reaction are increased or diminished, but require further study. All these pupillary alterations are more quickly produced, more intense and last longer, in mentally deficient individuals than in normal, even with small doses of alcohol. In pathological intoxication the pupils may even become absolutely rigid.

3. *Diascleral Light-reaction.*—A series of investigations upon the eyes of fifty normal individuals and some with hemianopia and other eye conditions, also upon freshly extirpated eyes of animals. The method of examination was similar to that employed by Veraguth in 1905 and the results were essentially the same as those published by that author. The phenomena observed were that a pencil of strong light thrown on the cornea caused a perception of a spot of light in the temporal visual field whether the light was thrown on the nasal or temporal side of the cornea. Up and down movement of the light caused a corresponding movement of the light perception when the light was on the temporal side, but a reversed motion when on the nasal side. Changing the direction of the beam of light did not change the location of the light perceived, the phenomena were observed with lids closed as well as open. The light was perceived, by hemianopic persons, as well on the blind side as on the normal. The author admits his inability to explain these facts at present.

4. *Neuroses after Lightning Stroke.*—Several cases are described. They show an extreme variability of the results. After severe injury by lightning we sometimes see complete recovery while often after a less serious trauma a very prolonged series of nervous symptoms may occur. The prognosis is therefore uncertain. It is remarkable that in two previously nervous persons, their nervous symptoms instead of becoming worse, actually improved or disappeared. This, the writer believes, cannot be due wholly to psychic effect but in part, at least, to the electricity.

J. W. Moore (Central Islip).

Book Reviews

THE HEALER. By Robert Herrick. The Macmillan Co., New York.

Robert Herrick has created the character of a physician with ideals and aims which in his youth he holds to be incompatible with the art of healing as practised in large cities by the majority of men. Keen of brain, the wonder of his fellow students and partially a slave to drugs he goes to the wilderness such as used to be found in the Adirondacks, and lives the life of a native, healing the lumbermen and trappers while fighting down his habit.

The feeling of the primeval forest at night, the illimitable wilderness in the snow, and the freshness and the glory of the northern dawn are all pictured in the story with a power that makes it easy to understand how the fresh young society girl who is spending her summer on the edge of the wilderness should fall in love with him, after he has saved her life by a daring operation.

The contrast of human aspirations, ambitions and contentments that is afforded by this odd mating forms food for comment by the other well-drawn conventional types of men and women in the novel, as well as speculation for the reader; while to the author it gives an opportunity to outline the ideal honor of a physician's calling by contrasting his hero's whole-souled devotion to his poor and ignorant patients, with the subtle methods of advertising, and practice building which are in vogue in most communities.

Against the will of this ardent Healer, who makes his patients, whether wealthy or poor, work their way back to health by building log huts, his wife and a wealthy railroad magnate create a furor for his outdoor camp, and his Indian Spring, and the wealthy begin to flock thither. The more he protests against their self-indulgence, and brow beats his patients into building their own beds and doing their own washing, the more they love to feel themselves part of the interesting fad, and the wider grows the fame of his Spring, until the necessity of working for money to satisfy his wife's desires for herself and their children has estranged him from her, and embittered his spirit, and lost him his will. To the rescue comes one of those women with a soul shining out of deep sad eyes and a very thin body, who Herrick more than once has permitted to transiently mate with his misunderstood hero, and after that the Healer's will comes back. He conquers his drug habit for the second time. A fire sweeps away his too successful sanitarium in the woods. He frees himself from his wife and children, for whose support, against this time he has been saving money.

"You did not know" he says to his wife, "that money is blood—nay more—it is the spirit of the man coined? A doctor who makes fifty thousand a year, as I have done, has coined his soul and sold it."

He begins life again in the deadly dreariness of back streets in a city. Here, as he walks "the murmuring streets of the human wilderness, and read again the innumerable signs of the would-be healers before

their doors, he was no longer scornful, no longer intolerant of them and their incompetence. They too 'patched' with their limited power as he with his, for the most part honestly, doomed by those human conditions that make life what it is, doomed to large facilities, to base compromises, to inefficiency and waste."

And yet the living of the high ideal of vigorous youth, after serving its place in the story, as a foil to all the social tricks of a merely lucrative practice, serves a still better purpose, for after the Healer realizes that he has not lived up to it he perceives that many men are giving their lives more honestly, more humbly, more humanly even than he in his wild erratic insistence on lack of convention; and so one's faith in the patient unceasing toil of true physicians is not destroyed, even though very illuminating flashlights are turned upon some aspects of the career of their most successful brethren. It is a book for a physician, and especially a neurologist, to enjoy keenly.

JELLIFFE.

ANATOMY OF THE BRAIN AND SPINAL CORD. By J. Ryland Whitaker, B.A., M.B. (Lond.). Fourth Edition. E. & S. Livingstone, Edinburgh. 5s. 6d.

This excellent little compendium, written originally by the author as a student, has been revised in a fourth edition. It is clearly written, well illustrated, and is a thoroughly usable presentation of the subject for students.

JELLIFFE.

MANUAL OF PSYCHIATRY. By J. Rogues de Fursac, M.D. Translated by A. J. Rosanoff, M.D. Third Edition. John Wiley & Sons, New York.

Kraepelian phychiatry seen through French eyes, and excellent eyes at that, is what we have in de Fursac's excellent short manual. We have had the pleasure of commending this small translation highly, and again take occasion to reiterate our judgment that this is an excellent book.

Dr. Rosanoff has added some sections on Race Psychopathology, Mendelianism in the Psychoses, Psychotherapy, Constitutional Make-up in Dementia Præcox, and Manic Depressive Psychosis; also the cerebro-spinal fluid and the Binet-Simon mental age tests. These have made the volume even more valuable than the French original. We regret the use of the word "insanity" as having a medical significance, "Heredity of insanity," "those forms of insanity," etc., thus by implication retaining the use of an old symbol signifying that "insanity" was all of the psychoses lumped together. Why not "heredity of mania," forms of "mania," as Pinel used the term? He made it synonymous with all of the psychoses.

JELLIFFE.

Notes and News

LEAGUE AGAINST EPILEPSIES.

Program of the meeting of the international Liga against Epilepsy, to be held at Zurich, 6th and 7th September, 1912: A. Business meetings (President Professor Tamburini); (1) Statement of place and time of next meeting, (2) Election of the board, (3) Discussion of statutes (Epilepsia, 2 Vol., 4th fasc., p. 321), (4) Relation Liga and national association (especially the American one), (5) Relation Liga and periodicals. B. Scientific meeting (President Professor Forel); (1) Theme for discussion: Alcohol epilepsy, introduced by Professor O. Binswanger, (2) Theme for discussion: Saltless diet. Introduced by Professor Donath, Budapest, Dr. Ulrich, Zurich, and Dr. Balint, Budapest, (3) Paper on: Internal Secretion in Epilepsy, by Prof. H. Claude (Paris), (4) Paper of Alden Turner (London), (5) Paper by Professor Mingazzini (Rome), (6) Paper by Dr. Munson (Sonyea, N. Y., U. S. A.), (7) Myoclonic Reflexes in invertebrate animals. Ljj. Muskens (Amsterdam).

Address of secretaries of the Liga: 33 Nervierstraat, Antwerp, 286 Overtoom, Amsterdam.

Dr. C. B. Davenport, the author of "Eugenics in Relation to Heredity," and W. F. Blades are engaged in a study of heredity and associated malformation of the oral cavity. They solicit correspondence with physicians who can supply histories of families, more than one member of which has an oral defect. Such data will be held as strictly confidential, and will be used solely to aid in the solution of a problem which is not only of scientific but of humanitarian interest.

Correspondence should be addressed to Dr. C. B. Davenport, Eugenics Record Office, Cold Spring Harbor, L. I., N. Y.

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Original Articles

BILATERAL SUPRANUCLEAR PALSY OF THE UPPER FACIAL DISTRIBUTION

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The present study includes two cases, one shown by Dr. Spiller to the Philadelphia Neurological Society in 1906,[1] and the other reported by Dr. Dercum[2] in a paper upon meningo-myelitis. The first of these merely presents a clinical record; the other supplied pathological material, and serial sections have been made by me of the medulla oblongata, pons, and part of the mesencephalon. Sections were also taken from most of the cranial nerves and the cord. The interesting feature that the cases present in common is the occurrence of a double almost complete facial palsy of supranuclear origin. In a survey of the literature of the past ten years, almost nothing could be found touching upon this subject. A double complete facial palsy as the result of upper segment disease is evidently, therefore, so rare that the pathological proof of this condition is a valuable contribution to the list of disease states of the central nervous system. Oppenheim, although he mentions the involvement of the upper branches of the facials in asthenic bulbar palsy, does not state that the parts supplied by

[1] Journal of Nervous and Mental Disease, 1906, p. 594.
[2] *Idem*, 1905, p. 1.

these branches are ever affected in pseudo-bulbar palsy. These cases have also some value in the light which they throw on the nuclear origin of the upper facial branch supplying the orbicularis palpebrarum, corrugator supercillii and occipito-frontalis muscles.

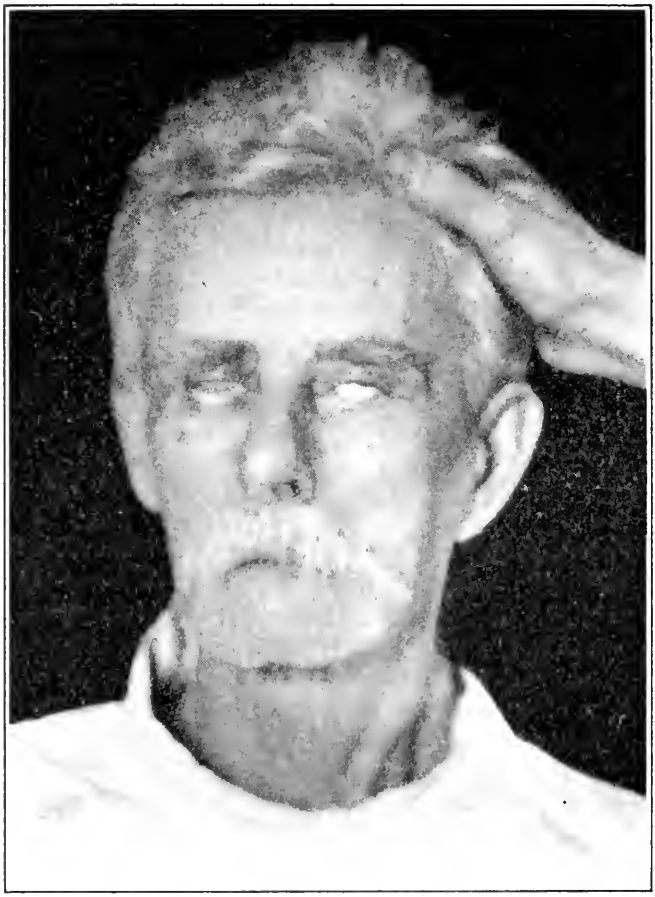

FIG. 1. Photograph of patient (Case 1), showing bilateral facial palsy including the upper distribution.

Mendell, Tooth, Turner and others believed that the fibres governing these muscles arise in the caudal portion of the oculo-motor nucleus, and, after passing down the posterior longitudinal bundle, enter the facial nerve, most probably as it curves back of the sixth nucleus in close proximity to this bundle, to be finally distributed through its upper branch to these muscles. The weight

of evidence has, however, more recently been thrown on the other side of the controversy as to the origin of these fibres, namely that they proceed from the facial nucleus itself. Bruce in an interesting and very impressive study of the facial nucleus, reviews the evidence supporting each point of view, and then adds recently observed facts in favor of these fibres arising from the seventh nucleus itself. He categorically states that this is the true solution of the controversy. The second case here presented confirms such a conclusion. It will be necessary to first give an account of the clinical aspect of these two cases.

The following is a description of the first case, which was presented clinically by Dr. Spiller to show the possibility of marked paralysis of the upper branches of the facial nerves, as well as of the lower, occurring in facial diplegia when lesions implicate bilaterally the cerebro-pontile tracts of the facial system, without involvement of the facial nuclei.

A man of 62 years, who denied venereal infection, was admitted to the Philadelphia General Hospital on December 6, 1905, presenting a left-sided hemiplegia, with some loss of power on the right side, and a bilateral facial palsy. The history that he gave was, that two months previously, while in good health, he first complained of pain around his heart and in both temporal regions, but continued to work. A week later he was compelled to go to bed on account of weakness in his arms and legs. Three days later, while making an attempt to get out of bed, he had a fainting spell, during which his wife noticed a twitching of the right side of the mouth. He was unable to reply for about five minutes, although he seemed to know that his wife was speaking to him. The next day it was first noticed that his face was drawn slightly to the right. The weakness, which had persisted in his arms and legs, gradually lessened, so that in about three weeks he was able to get up and walk about. He did not at this time notice any difference in the two sides of his body, and thinks he could close both eyes. Four weeks after the first attack, he had, while lying down after a heavy meal, a stroke which affected his left side. The arm was completely paralyzed, but the leg was not. The following day he was unable to move arm or leg, and noticed for the first time that he could not close either eye. The notes bearing on his nervous condition after admission to the hospital are quoted literally:

"Condition on Admission, 12–6–1905.

"Pupils are unequal. The left is slightly the larger. Both react to light, and in accommodation and convergence. All ocular movements seem to be normal, excepting convergence, in which the right eye is not carried in quite so far as is the left. There is a marked asymmetry of face, for the mouth is drawn very much towards the right. The left naso-labial fold is almost obliterated."

Notes were made by Dr. McConnell.

"The movement of the occipito-frontalis on the left is lost and much impaired on the right. Corrugators are similarly involved. The eyes can not be closed, but the right can be more nearly closed than the left. The left angle of the mouth is depressed and can not be elevated; the right is depressed but can be elevated slightly. When the mouth is opened the jaw goes distinctly to one side. The tongue is protruded to the left and is the seat of a fine fibrillary tremor. There is very slight or no difference in the movement of the temporal or masseter muscles.

"*Upper Limbs.*—The right arm is somewhat generally wasted. It is freely movable but the power is diminished. The grip is only fair. The right hand is the seat of a fine tremor, which is not increased by voluntary effort.

"The left arm is completely paralyzed, and is slightly spastic. The spasticity shows itself when the arm is fully extended. There is evidence of commencing contracture of the biceps. The proximal end of the upper extremity shows greater spasticity than does the distal end. The hand and fingers are completely flaccid. The reflexes are somewhat exaggerated on both sides. Movement is well preserved in right lower extremity. Spasticity of the left lower limb is slight and is much the same as that described in the left upper extremity. Both knee jerks are increased, but both Achilles jerks seem to be lost.

"Babinski's sign is present on the left; a normal plantar reflex is found on the right side.

"Sensation to touch, pain and temperature seems to be everywhere preserved.

"1–1–06. Patient closes right eye much better than he did.

Dr. Spiller made the following notes:

1–1–06. "Faradic irritation of the left seventh nerve just behind the ear produces distinct and prompt contraction of the whole distribution of left seventh nerve. Contraction is prompt to faradic current over all muscles on the left side of the face, contractions are about equally prompt on each side of the face.

"1–22–06. Patient can move the occipito-frontalis muscle on the right side much better and also closes both eyes much better. The right side of the mouth can be almost completely elevated.

"3–21–06. The patient closes his eyelids well on each side, and the resistance, when an attempt is made to raise the upper lid, is normal. He also wrinkles the forehead slightly on each side. Very little voluntary power is preserved in the lower distribution of the facial nerve on either side, but there is a little more on the right than on the left side. The left upper limb is completely paralyzed. Biceps and triceps tendon reflexes are exaggerated on the left side and very prompt on the right.

"The left lower limb is completely paralyzed except at the hip.

The patellar reflex is exaggerated on the left side, and is about normal on the right side. Ankle clonus is obtained on the left side, not on the right. The Babinski reflex is typical on the left side, but is not obtained on the right side. Left lower limb is quite edematous. Sensation for touch and pain is normal in all parts of the body.

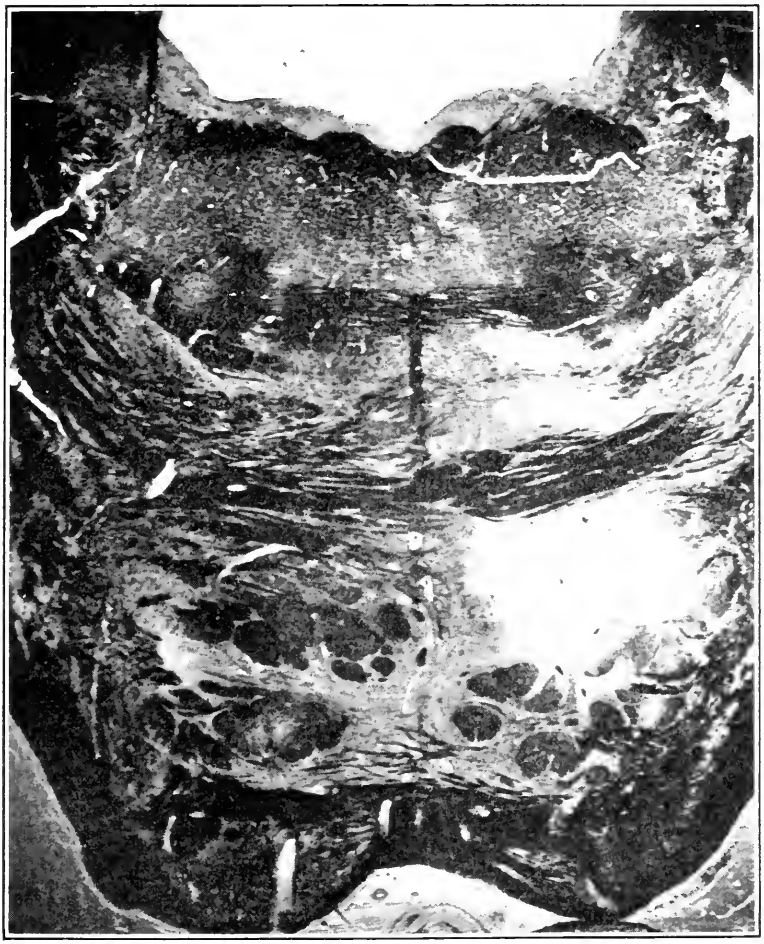

FIG. 2. Photograph of a section through the pons (Case 2) above the facial nuclei. Photograph by Dr. A. J. Smith.

"3–22–06. Voluntary power in both upper and lower right limbs is very fair."

There can be no doubt, of course, that there was a cerebral lesion on the right side, since the complete left-sided hemiplegia,

with spasticity, is so typical (including the left side of the face). But the one factor that especially differentiates the condition of this side of the body from the usual hemiplegia due to a right-sided cerebral lesion is the inability to close the left eye and to raise and contract the brow. Mirallié, who has discussed the condition of upper facial palsy in cerebral hemiplegia, thinks that contrary to the ordinary opinion, the orbicularis palpebrarum, corrugator supercilii and occipito-frontalis are always slightly involved, and that this can usually be demonstrated by a difference in the size of the palpebral fissures, by the fact that the external end of the eyebrow can be felt nearer to the external inferior angle of the orbital cavity, by commanding the patient to raise and lower the brow (when, after several trials, it may be seen that it moves unevenly, possibly more slowly, and neither so far up nor down as does that on the sound side), and by having him test as to whether he can close the eye of the affected side alone when it is known that he could previously do so. A slight implication of the upper branch of the facial nerve unquestionably occurs in many recent cases of hemiplegia.

The apparent escape of these muscles supplied by the upper branch of the facial is due to the fact, as commonly understood, that the two sides are innervated together and have no real independent action. In other words, the only reason that these muscles apparently act normally in a cerebral hemiplegia is that the other side of the brain is normal. In the case under discussion, not only are these muscles opposite to the right-sided lesion palsied to such a marked extent that apparently the usual factor in making their movement possible (a normal condition of one side of the brain) is no longer working as ordinarily, but the other (that is the right) side of the face is also palsied. It was stated, also, in the above notes that the jaw deviated to one side when the mouth was opened—a phenomenon that does not usually occur in an ordinary hemiplegia, although weakness of the muscles of mastication is sometimes detected. We may assume that the lesion on the right side of the brain was above the fifth nerve nucleus, since the pterygoids and all the muscles supplied by the facial nerve were affected, as well as the whole muscular system on the left side below these. As said before, a lesion on the right side alone, above the fifth nucleus, would not, however, cause such a marked paralysis of the muscles supplied by the upper facial and

the fifth nerve on the left side as occurred, and we are, therefore, driven to inquire whether there is not also a lesion on the left side of the brain, which would make impossible the ordinary synergetic action of these muscles on the left with their homologues on the right, when the paths leading to the innervation of the latter are intact. And this inquiry is seemingly answered in the positive by the fact that there was a facial palsy on the right —less to be sure than on the left, but still present to a marked degree and including, at one time in the history of the case, the upper portion of the face. There was some weakness of the extremities on the right, but not a complete paralysis. The indications are, therefore, that the left sided lesion was much less extensive than that on the right side, and that it was also above the facial nucleus. This position, that the lesions were above the seventh and even the fifth nuclei, is, of course, made much more secure by the fact that both facials responded normally to the faradic current and that nowhere was there any disturbance of sensation. We may also assume it to be most likely that at least one of these lesions was below the third nucleus, since the nerve there arising remained unaffected on both sides, and a double lesion above that area would in all probability work the same results in the muscles supplied therefrom as are produced by a double lesion above the cooperating facial nuclei in the region innervated by them, although the fibers passing to the third nucleus might escape.

The case to follow, with the pathological study, will show whether the explanation of the symptoms in this, by the assumption of lesions in the pyramidal tracts on both sides above the facial nuclei, is justified. It is also a case of syphilis as the history of the one just studied clearly shows it to be.

The patient, a German of 38 years, gave a history of having had, four months before admission to the Philadelphia General Hospital, a sudden attack of dizziness, with dimness of vision, but no loss of consciousness; and weakness, but not paralysis of the right leg. He improved very much, but a few days later he had another attack of dizziness, which was followed by loss of speech, inability to swallow, marked weakness in the left arm, and, to a less extent, in the left leg. He stated that his mouth was drawn to the left. After three days his speech returned, but the loss of power in his left extremities persisted until his admission on June 6th, 1902. He then could move his right arm and leg in all directions with considerable strength, but there was loss of power

on the left side, which was greater in the arm. This was accompanied by increased tendon reflexes, even clonus in the lower extremity, and some wasting of the muscles of the arm, shoulder and thigh. This wasting was also especially noticed in the interosseous muscles of the hand. The arm showed contractures—the forearm was flexed on the arm, and the fingers on the hand. The tendon reflexes were increased on the right, and there was also ankle and patellar clonus on this side. There was a Babinski reflex on both sides. There were no eye symptoms. The tongue deviated somewhat to the right when protruded. The mouth was drawn slightly to the left but on voluntary effort it was moved better to the right. No difference, on the other hand, was noticed when the man smiled. The pterygoids and masseters were apparently weakened. He was unable to completely close either eye; forcible effort caused rapid tremors of both eyelids. At first no paralysis was noted in the occipito-frontalis or corrugator supercillii, but later the action of the left occipito-frontalis became evidently diminished, and the brow on that side was relatively smooth. When the note of this last observation was made it is stated that there was an appreciable change in the symptoms—that his right arm and leg became distinctly ataxic, and that the left leg was so spastic and muscular regidity so great that movement was decidedly restricted. There is then a note that the "left eyeball occasionally drops outward as though from weakness of the left internal rectus," although the statement is elsewhere repeatedly made throughout the notes, that the extraocular muscles were normal. The tactile, thermal, and pain senses are always stated to have been normal, as was also the sense of position. The abdominal and cremasteric reflexes were more active on the right side, and there was a jaw jerk present. There was diminished faradic contractility in the interosseous muscles and abductor policis of the left hand. The right leg, as well as being atactic and somewhat rigid, had also become somewhat weaker. On October 17 the man had another attack of dizziness which caused him to fall. After this his speech, which had been slightly thick before, was a little worse.

The examination of the eye grounds by Dr. Crosky in July revealed contracted arteries (dilated veins and slight hyperemia of the left disc, but no signs of neuritis, atrophy or extravasation. Dr. de Schweinitz's examination of the eyes on October 29th is as follows: "Both discs now distinctly degenerated, giving the appearance of a low grade interstitial neuritis. The veins are very full and the arteries are contracted. The reaction of pupils to light is normal. There is no diplopia. Rotation of eyeballs is normal. There is partial paralysis of each orbicularis palpebrarum. The patient is unable to completely close the eyes."

On November 22 Dr. Spiller dictated the following notes: "It is noted since the last examination (about a month ago) that

the condition has become much worse. The voice is weaker and more indistinct. The patient is now unable to remain out of bed. When sitting in a chair he falls over. He makes no complaints. His face has a mask-like appearance. He is unable to close the eyelids completely, and when he makes an effort to do so, the palpebral fissure on each side remains open for from one eighth to one quarter of an inch. He has much difficulty in showing his teeth, and does it very imperfectly. He cannot draw up the

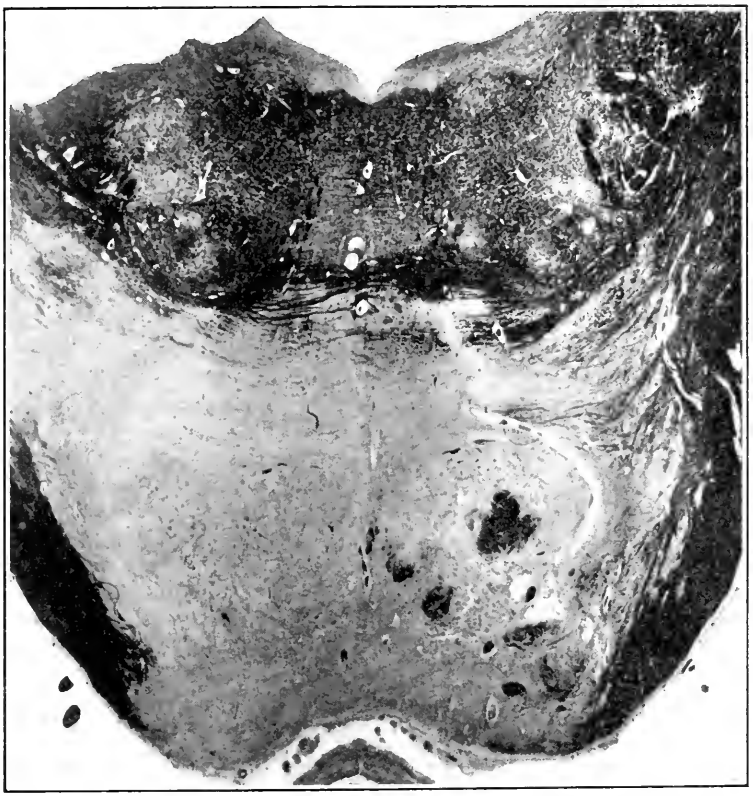

FIG. 3. Photograph of section at a lower level than that represented in figure 2. Photograph by Dr. A. J. Smith.

corner of his mouth on either side. His tongue deviates well to the right when it is protruded, and is unusually thin, but equally so on both sides, and shows no fibrillary tremor. His pupils are equal, possibly the left is a little larger than the right. His irides react promptly to light. The movement of the eyeballs is normal in all directions. There is no nystagmus. Every now and then, during the examination, there are contractions of the facial muscles, such as occur in laughter, and this takes place without any-

thing to amuse him. He can move the right upper limb freely, but the movement is ataxic, and he has difficulty in placing the first finger of his right hand on the end of his nose. The left upper limb is paralyzed, and he can move it very slightly at the elbow. The contractures at the left elbow and in the fingers are very marked. The biceps and triceps tendon and wrist reflexes, in the left upper limb, are much exaggerated. These reflexes in the right upper limb are slightly exaggerated.

Sensation for pain is preserved in both upper limbs over the trunk and in the face. Sensation for touch can not be accurately determined on account of his feeble mental condition. He has incontinence of urine and feces. The left lower limb is paralyzed, there is contraction in extension and it is impossible to flex the left leg passively at the knee. The patellar reflex on the left is exaggerated but no movement of leg can be obtained because of the contractures. The patellar reflex on the right is much exaggerated. Ankle clonus is distinctly present on both sides. Babinski's reflex is very marked on both sides—the big toe is moved promptly upward. Sensation for pain is preserved in both lower limbs."

Further notes while he was in the service of Dr. Dercum were on the following dates.

December 26, 1902: "He is unable to raise himself in bed. He can, however, turn over on the left side by grasping the rail of the bed with the right hand. He says that he is comfortable and has no pain. He closes his eyes more incompletely than before; the palpebral fissure on the right side now remains open for about one third of an inch, on the left for about one quarter of an inch. He has less power to show his teeth than before, and both angles of the mouth can be but feebly retracted, the left to a less extent than the right. When he laughs, the angles of his mouth are retracted much better and equally. The tongue is protruded only slightly and with difficulty, and it deviates markedly to the right. There is no change in the pupillary phenomena or ocular movements. Patient moves his right arm in various directions but the movements are ataxic and jerky and his grip is very weak. He cannot move the left upper extremity, except to make a faint movement of flexion at the elbow. There is no motion of the hand or fingers. Contractures of shoulder, elbow, wrist and fingers are present as at previous examinations. The reflexes, sensation and sphincters are as before. He is able to move his right leg feebly in various directions, and also the foot and toes. He can move the left leg feebly, flexing it slightly at the knee. The left leg can now be moved passively at the knee, as it is not quite as rigid as at the last examination."

On January 22, 1903, he had a rise of temperature, and on the following day, after showing general failure, which was accompanied by a small and very rapid pulse, he died. His respirations had remained normal in frequency, his lungs clear, and his abdomen had shown no distention.

The pathological study includes serial sections of a portion of the mesencephalon (two sets of about ninety sections each in the region of the third and fourth nuclei), and of the lower half of the pons and the upper portion of the medulla oblongata (to the number of about three hundred and sixty sections), also sections of the third, fourth, sixth, seventh and eighth cranial nerves, and of the cervical, dorsal and lumbar portions of the cord. It should be mentioned that owing to the material having been kept a long time in Müller's fluid, the writer was compelled to rely for cell study upon the acid fuchsin stain. The tissue throughout shows intense round cell infiltration. The vessels, frequently engorged, are thickened and surrounded by a still more intense grade of round cell infiltration. Some of these vessels thus appear to be the starting point of softening. The pia-arachnoid is thickened and presents intense infiltration by these small round cells. Immediately beneath this, the neuroglia seems to be somewhat proliferated and presents a dense appearance over the pyramids. The vessels at the base of the brain also show marked thickening. There is some proliferation of ependymal cells. These same general changes occurred in the cortex, although they were there less pronounced than elsewhere.

Region of third nucleus in mesencephalon.

There is a degeneration of the extreme inner portion of the right crus. Through the region of the mesencephalon there are numerous small areas of beginning or complete softening. In the upper sections there are, on both sides, small areas of infiltration, in some sections reaching a real softening, between the posterior longitudinal bundles and the red nuclei; that is, ventral to the former and dorsal to the latter. On the left, a small area of softening in the red nucleus itself connects with the patches impinging upon and to a certain extent infiltrating into the posterior longitudinal bundle. On the right, there is considerable destruction of the posterior longitudinal bundle itself. On the left, in a few of the sections, the patches of softening encroach upon the latero-dorsal portion of the third nucleus, probably destroying a few cells, and there is also a patch along the median side of the red nucleus, just outside of and catching a few fibres of the emerging third root on that side. In addition to these, there is also, on the left, a collection of small patches in the outer half of the substantia nigra, extending to a very slight extent into the pyramidal tracts. There are in this series eight, or ten, or more different foci of degeneration, but several of these, in some sections, merge more or less into each other, so as to form larger areas. There is, then, a very slight destruction of the right third nucleus in the extreme lateral portion of its dorsal part, owing to a patch of softening which also involves some of the posterior longitudinal bundle, and a still slighter involvement of the corresponding portion of the left nucleus, with an additional patch of

softening to its outer side and encroaching slightly upon its ventral portion. The cells otherwise throughout the nuclei have a normal appearance with the exception of containing an excessive amount of pigment. Only a few cells in the immediate vicinity of these softened patches are smaller and present eccentric nuclei. As others have observed, these third nuclear cells seem to have a high degree of resistance, for some of them appear normal even when surrounded by softening.

Region of fourth nucleus in mesencephalon.

There are areas of softening and degeneration here which are continuations of some of those above, as well as new foci. The patches of softening (there are three) in the left crus, are here more ventral, so that they are in the pyramidal tract at about the junction of the middle and outer thirds of the pes. Certainly the width of the area destroyed is one-sixth of the whole pes. Of course, the same degeneration of the inner third of the right crus here continues, and the inner portion of the right posterior longitudinal bundle shows degeneration throughout these sections. In addition to these lesions there is a patch of softening, to the right of the median line, in the fibres of the brachium, at the decussation, before the red nucleus has appeared. There is also a very small focus in the left fourth nucleus, destroying a few of its cells. In only one place are a very few of the cells found with somewhat excentric nuclei, otherwise they are normal in appearance throughout on both sides.

The upper level of the next series begins below the emergence of the fifth nerve roots, but well above the upper limit of either facial nucleus, and above the sixth nuclei and the roots passing therefrom through the pons. Fifty sections above the upper limit of the facial nucleus, there is, an area of softening in the posterior part of the right pyramidal tract destroying nearly half of this tract, a smaller area on the same side just ventral to the trapezoid fibres, and an area of degeneration in the formatio reticularis, just anterior to and to the outer side of the posterior longitudinal bundle. On the left the pyramidal fibres show a slight amount of degeneration, and there is a beginning small patch of softening. These areas increase in size as lower levels are reached, until, at the beginning of the facial nucleus, on the right (which in these sections is a little higher than on the left), practically the whole of the right pyramidal tract has been destroyed, only one band of partially degenerated fibers remaining. And on the left, at least two thirds or three fourths of the pyramidal tract has been destroyed or shows degeneration. There is a tendency at this level for these separate patches of softening to merge, so that the right and left join as well as the two areas on the right. All of the transverse fibers ventral to the trapezoid bundles are here destroyed, and the fillet on the right is much affected. There is also a small patch of softening just median to the sixth root

(possibly catching some of its fibers) and just anterior to the posterior longitudinal bundle, which is very slightly encroached upon. A few sections lower, when the left facial nucleus is first seen, there is practically one large area of softening of nearly the whole ventral portion of the pons, leaving no pyramidal fibers on the right and very few on the left. The facial nuclei extend through this series for a hundred and thirty to forty sections. This extensive softening continues in the ventral portion of the pons as far as its lower border, which is nearly the lower limit of the facial nuclei, and throughout this area all the transverse fibers in the ventral part of the pons are interrupted. The pyramidal tracts in the upper part of the medulla oblongata show some medullated fibers on the left, but so few on the right that they could be counted. The actual softening does not extend below the pons, except for a very short distance in the most ventral transverse fibers on the right side.

The facial nucleus presents normal cells throughout on the right, but on the left while the nucleus as a whole appears to be in a normal condition, there is occasionally found a cell showing some chromatolysis or a slightly excentric nucleus or both of these conditions. This alteration is insignificant. But both seventh nuclei look pale in places, from evident degeneration of the terminal fibres of the upper segment.

The cells of the sixth nuclei also appear fairly normal, with the exception of a very few cells showing a tendency to excentric nuclei. It is possible, however, that the right nucleus has a scarcity of cells, and that they are smaller than those on the other side.

The sections of the cranial nerves were made below, but near their exit from the brain. Both eighth nerves appeared to be in a condition of very fair preservation. A careful study of both seventh nerves (just peripheral to their exit from the junction of the pons with the medulla oblongata) shows them to be normal. The right sixth is partially but distinctly degenerated; the left is also affected but to a lesser degree than the right. The fourth nerves present slight degeneration, more especially the left. There is marked degeneration in both third nerves.

The spinal cord presents the same general changes (except distinct areas of softening) that are seen in the medulla oblongata and pons, namely meningitis and infiltration and thickening of the vessel walls. There is moderate general peripheral infiltration, much less marked in the posterior portion of the cord. Throughout the cord there is very marked degeneration (with infiltration) of both crossed pyramidal tracts and of the right direct pyramidal tract, with slight degeneration of the left direct pyramidal tract.

We have, then pathological evidence in this second case of a condition that we have assumed in the first, namely, a double

facial palsy due to lesions interrupting the pyramidal fibres before the facial nuclei are reached. The facial nuclei, as far as the cells constituting them are concerned, were seen to be practically normal throughout, with the exception of a very few cells on the left, showing slight degenerative changes, and nowhere do any of the areas of softening impinge upon either the facial nuclei or fibers; moreover both facial nerve trunks were normal. We have, therefore, pathological evidence that the bilateral facial palsy, including the distribution of the upper branch of both seventh nerves, was in this case due to lesions involving both cerebro-pontile segments, with an escape of the lower segment. And such a double lesion must evidently produce a marked palsy of the upper face, since the factor that prevents the appearance of a unilateral upper face palsy in ordinary hemiplegia is eliminated, namely the healthy condition of the upper segment of the motor system on one side innervating these muscles through synergic action. But even in hemiplegia this synergic action preserves a normal condition in the upper facial muscles more apparent than real. Investigation according to Mirallié would as a rule reveal at least some loss of tone there. As previously mentioned, Bruce has surveyed the evidence as to the origin of these fibers traversing the facial nerve to the frontalis, corrugator, and orbicularis palpebrarum muscles, and concludes, with the support of his own case, that they come from the dorsal part of the facial nucleus and entirely from the same side as that to which they are distributed. Mendell, after section of the upper facial nerve in young rabbits and guinea pigs, found atrophied cells in the lower part of the oculo-motor nucleus of the same side, and traced their connection with the facial nerve root, as it winds back of the sixth nucleus, through the posterior longitudinal bundle. This view of the supply to the upper facial muscles seemed to satisfactorily explain the comparative escape of the muscles of the upper face, while those of the lower part of the face are involved, in bulbar palsy and amyotrophic lateral sclerosis. Bruce, quoting Willbrand and Saenger, presents a number of cases, with the authors' names, of ophthalmoplegia externa associated with involvement of the orbicularis palpebrarum or the other upper face muscles. But he remarks that these cases were only clinical reports and in the absence of post mortem demonstrations that there was alone degeneration of the third

nuclei, cannot be held as valuable evidence that this nucleus gives rise to the fibers of the upper facial. He suggests that these associations may occur without a single lesion. However, even though it is accepted that the upper facial fibers take origin only from the facial nucleus, there is no denying a very close association between the cells giving origin to them and the third nucleus, and it is quite likely that there are fibers running through the posterior longitudinal bundle, from the latter to the former, which carry reflex impulses and also to a certain extent help to maintain the tone of the upper facial distribution.

Against Mendell's theory are a number of observers (Cassirer and Schiff, Bernhardt, Sauvineau, Siemerling and Boedeker, Parhon and Nadejde, Marineseo, Kotelewski, and Minea), who have either found no degenerated cells in the third nuclei in upper facial palsy; or who have found no upper facial palsy in degeneration of the third nuclei, even in its caudal part; or no axonal reaction in the third nucleus, either on section of the upper facial or the whole nerve, but a degeneration in some of the cells of the facial in the former or all in the latter case. Bruce's case demonstrates the same fact (as does that of Fowler and Painy), and he concludes rather positively, as before stated, that the upper facial fibers arise from the facial nucleus, in probably its dorsal part, and that there is no crossed origin for the facial. In the second case here studied it has been shown positively that the facial palsy, at least that of the lower face, was of cerebro-pontile segment origin, since the facial nerves and nuclei had escaped any destruction, since there were spasmodic contractures during life, and since there were sufficient lesions in the pyramidal tracts above the facial nuclei to explain the symptoms. If it were assumed that while the palsy of the lower part of the face was indisputably of cerebro-pontile segment origin, that of the upper part of the face was of lower segment origin (that is in the third nucleus or fibres arising therefrom) not only would that be a strained explanation, but one not consistent with the facts observed. It will be recalled that there was a degeneration of the extreme inner portion of the right crus and that it is not possible to say whether any of the pyramidal fibers to the third nucleus were caught or not, also that the softening in the outer portion of the left crus had not at this level penetrated the pyramidal tract, but was behind it. Therefore, even if any of the fibers in the

pyramidal tract to the third nucleus were involved it was on the right side only, and the palsy on both sides could not be accounted for. But, following Obersteiner, it is extremely unlikely that the pyramidal fibers were affected even on the right side above the third nucleus. Moreover, there were detected no palsies at all in any of the muscles controlled by the third, fourth, or sixth nerves. It is evident, therefore, that there would be no warrant whatever for claiming the upper facial palsy to be supra-nuclear in origin if the fibers of the superior facial arise from the third nucleus. If this were the nucleus of origin, we would, therefore, be driven to the hypothesis that the complete facial palsy was caused by lesions of both pyramidal tracts at and above the level of the facial nuclei, with double lesions in either the third nuclei in its lower part or in the posterior longitudinal bundles. The study of the third nuclei do not at all warrant the conclusion that the palsy was caused by lesions there. There is somewhat more evidence in the destruction of portions of the posterior longitudinal bundles, but the limited degeneration seen throughout the mesencephalon in the right bundle is not seen throughout this area in the left one. In the pons the posterior longitudinal bundle looks quite normal on the left, but that on the right is possibly a shade lighter, although the difference is barely perceptible. It is, therefore, only on one side, the right, that an assertion could be made that there was degeneration in the posterior longitudinal bundle extending from the mesencephalon to the level of the facial nucleus, and that scarcely perceptible in this portion of the pons. But, even granting that it is sufficient on the right side to account for the upper facial palsy on that side (which it really does not seem to be), it still leaves us without a consistent reason for that on the left side.

Finally, this argument to show that the upper facial palsy was not due to disease in the lower segment of the facial motor system, either by destruction in the third nucleus or by interruption of the fibers supposedly travelling therefrom to join the root of the facial nerve as it winds back of the sixth nucleus, is rendered somewhat superfluous by the fact that both facial nerves were normal soon after their emergence from the ponto-medullary junction. We, therefore, find ourselves forced to accept the evident cause in the destruction of both pyramidal tracts just above the facial nuclei, and to positively assign the origin of the upper

facial fibers to some part of the facial nucleus. Although the evidence as to this origin has been strongly presented by several observers, it was felt that this phase of the case under pathological study, is of value in helping to establish still more firmly a fact formerly much disputed.

The study of the sections in this case also shows another interesting though well known anatomical feature, and that is, the addition of new fibers to the pyramidal tracts as these travel downward. In the lower part of the pons there is absolute destruction of all pyramidal fibers by softening on the right side, and yet, as we study lower sections, we see a few fibers appearing in the degenerated anterior pyramids and these increase in number as we proceed lower in the medulla oblongata. This is apparent on both sides but it is more evident on the right side because the destruction was there absolute, which of course eliminates the question of judgment, as to the comparative number of fibers. This increase is also noticeable in the cord, in which both the direct and crossed pyramidal tracts show many more fibers than one would be led to expect from the destruction above. The pyramidal tracts do not differ from other great tracts, in the fact that they are constantly losing and even gaining some new fibers in their progress downward, and from a study of these sections it would appear that after they have reached the cord they gain proportionately fewer the farther down their course is followed.

INTERMITTENT CLAUDICATION IN THE UPPER EXTREMITIES[1]

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Intermittent claudication or dysbasia intermittens angiosclerotica of the lower extremities has been described by Charcot, Sabourin, Magrez, Hunt, Riesman and many other writers, but very few cases have been reported (Nothnagel, Goldflam, Wwedenski, Embsden, Kronenberg and others) where the involvement was of the upper limbs.

In addition to this latter type several writers have reported affection of the tongue and face (Goldstein, Goldflam and others).

The following case which Dr. Spiller has kindly given me the opportunity of reporting, from his service at the University of Pennsylvania Dispensary, presents unusual symptoms, in the absence of any involvement of the lower limbs, in the almost continuous pain present, this extending even through the interparoxysmal periods, and in the absence of any abuse of the system that might, by a toxemia, cause arterial changes, but with an indirect cause apparently in frequent exposure to cold and overexertion, with the possibility of an acutely exciting cause in an attack of influenza.

Dysbasia intermittens angiosclerotica comes on, as a rule, in the years past middle life, during the period when weakness and a more or less sclerosed condition of the arteries would be expected. It occurs more frequently in the male sex, and when it does affect women, according to Wandel and Goldflam, the upper extremity type is the more common, this being attributed by them to the greater exposure and exertion of the arms as compared with the lower limbs, particularly in women of the working class.

In speaking of this tendency of the disease to involve the parts most used, it might be of interest to mention a condition occurring in marble cutters who use the pneumatic chisel. Through

[1] From the Department of Neurology of the University of Pennsylvania.

the kindness of Dr. Mills I was afforded the opportunity of questioning a patient under his care, who had a few of the symptoms caused by these automatic devices, and he informed me that the men who use them are frequently compelled to stop their work to rub their hands and wrists, because they become so numb and cold and white and painful, resembling greatly the picture presented by Raynaud's disease, and that they are often required to stop using the devices entirely, on account of the severity of the symptoms.

This is probably a condition caused by an occupation and similar to or identical with dysbasia angiosclerotica.

The exposure of the ankles to cold and wet is one possible reason for the great percentage of affection of the anterior and posterior tibial arteries, the anterior tibial and the ulnar (Bregmann) being the most frequently affected.

Some of the cases published during the last few years are well worthy of comment. Goldstein's case is of especial interest in that it brings up the possibility of there being a cerebral arterial spasm as the basis of cases such as he reports, wherein the leg, arm, eyes, larynx and speech were all involved, particularly as the motor symptoms were on the right side of the body. The general symptoms present in this case also point to an angioneurotic tendency, or at least to weakness in some degree, of the nervous system. Oppenheim believes inherent weakness of the nervous system to be of great importance as a predisposing factor in these cases.

Typical cases, with intermittent loss or diminution of muscular power, coldness and pallor of the affected limbs, pain and occasionally cramping, the absence of palpable pulsation in the radial or dorsal foot arteries, or even of the femorals, are all no doubt aided in their onset by any causes leading to arteriosclerosis.

Erb lays more stress upon the use or abuse of tobacco as a causative agent in arteriosclerosis than any other factor outside of lues, this latter being of course a well-known and most active cause.

Erb also reported cases of intermittent claudication with an acute onset resembling almost an infection and which he believed to have been due to an acute endarteritis brought on by severe exposure to cold and wet. Whether a like condition could occur in predisposed or partially diseased arteries, from an acute infec-

tion, such as influenza, as in my case, is not a certain point, but I think it deserves consideration.

As a rule pain is only present during the paroxysm (Kronenberg) and not when the patient is at rest and quiet and continuous pain, as in the case I am reporting, is very uncommon.

Many cases of so-called rheumatic muscular pains in the arms and legs are doubtless due, as Erb has suggested, to arterial changes, and might be considered as early stages of intermittent claudication. This pain and soreness of the muscles must not be confused with the symptoms in those cases in which the trouble is caused, according to Yawger and others, by nodular deposits in the muscular or intermuscular tissue and are such common causes of obscure as well as acute painful conditions.

Intermittent claudication may resemble in many respects a myasthenia, even showing the typical myasthenic electrical reaction, considered by many as pathognomonic of myasthenia gravis. Such a case was reported by Goldstein.

On the other hand, true myasthenia gravis may present an early symptom complex very difficult to distinguish from that of intermittent claudication, and I recall a case of this character, not yet fully recorded, which I saw at the University of Pennsylvania.

Venous changes or disease may give symptoms of claudication similar to those in cases of arterial disease, and a case of this kind has been described by Grieg and particular weight put upon the importance of looking for affection of the veins.

As so many of the cases reported have shown a distinct series of changes in the vessel walls, in many instances making it impossible to feel any pulsation, and as this hardening of the arteries has been suitably shown by radiographs, it demonstrates clearly that the arteriosclerosis is the basis of the disease. A secondary condition follows in the nerve trunks and fibers as would be expected where the loss in their nutrition is so great and in a case of Lapinsky's there was edema of the nerve sheath and marked changes in the endo- and perineurium, due to the excess of connective tissue.

Case W. D. (7075). Admitted to University of Pennsylvania Dispensary February 9, 1911. Man. Age 58. Slate quarryman.

Early history and family history negative. Patient smokes about $3\frac{1}{2}$ ounces of tobacco per week. Has not used alcohol at

all in last 25 years, and before then only in moderation. No venereal disease. About 15 years ago both bones of the left forearm were fractured and 10 years ago the left shoulder was partially dislocated by a fall from a small height. The man's occupation is such as requires continuous and rather severe or tiring use of both hands and the left hand has been particularly exposed to severe cold and wet.

Three weeks ago the patient had an attack of influenza and while confined to his bed during this illness he had a sudden onset of pain in the left upper arm, extending down the forearm, into the hand. The pain was very severe and the arm and hand became paralyzed so that no movement was possible in any of the muscles except those of the shoulder. The finger tips felt numb and the hand, forearm and lower part of upper arm became very white and cold. This attack lasted from two to two and a half hours and the symptoms are given in as near their order of occurrence as the patient could remember.

After this attack the patient could move all the muscles slightly but not so well as before the onset.

Remissions followed, four or five times daily for three days, but during these paroxysms the motor involvement was not so severe in character, becoming less marked in the successive attacks, so that at the present time the power in the muscles is fairly good though not normal.

Vasomotor phenomena no longer occur during the paroxysms.

Any prolonged effort causes intense pain in the left arm and forearm. This is not only present more or less constantly during the day, particularly when the hand is exposed to cold, but even in the night it is so excruciating as to keep the man awake for hours.

Examination: Right arm normal. Left arm slightly shorter than the right, due to the old fracture of the forearm. At this point of fracture there was a soft flabby mass of tissue anteriorly which may possibly be the pronator quadratus torn from its insertion and softened from disuse. All the muscles of the hand and forearm and the biceps and triceps were very weak. Reflexes in both arms about equal and slightly exaggerated—those of the legs normal. The brachial arteries in both arms were plainly palpable and not unduly sclerosed. Radial pulsation on the left was not obtainable and very weak on the right. Dorsalis pedis arteries not palpable on either side. Posterior tibial and femoral vessels on both sides easily distinguished though the latter were slightly weaker than normal. The heart, with exception of some accentuation of the second sound, was normal.

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ACUTE DELIRIUM IN PSYCHIATRIC PRACTICE, WITH SPECIAL REFERENCE TO SO-CALLED ACUTE DELIRIOUS MANIA (COLLAPSE DELIRIUM)

By Edward L. Hanes, M.D.

Rochester (N. Y.) State Hospital

(*Continued from p. 250*)

Case I. Fisher Gut. Admitted to the Rochester State Hospital July 17, 1906. Discharged by death from collapse delirium July 30, 1906. Diagnosis—collapse delirium.

Family History.—Patient is a clergyman, aged 63 years, whose father is said to have shown mental disturbance, whose sister was insane, but made a good recovery and whose family is admittedly a nervous one.

Personal History.—Patient was a boy of slight physique. His schooling was interrupted frequently by reason of ill-health. At the age of 18 he ran away and entered the Union Army, where his health improved, and on his return home three years later he seemed to have come into good physical health. Entered and graduated from Lafayette College; then entered Union Theological Seminary, and became a Presbyterian clergyman at about the age of 30 years. Married at the age of 32; is the father of five children, one daughter being described as of nervous temperament, and a young son as ungovernable and causing his parents much concern. Patient has been a very active man in his church work; very pleasant, courteous and friendly; always politic and not inclined to controversy; was well liked and has held the pastorate of his church for over thirty years.

About fourteen years ago, following grippe, patient suffered from nervous and mental breakdown, when he underwent treatment at Dansville and Clifton Springs Sanitariums, being compelled to give up his work for six months. During the height of his illness he showed some excitement and developed ideas of a suspicious character against one of the sanitariums, so that it was necessary to remove him to another, though he apparently made a perfect recovery. He is naturally a poor sleeper and a man of nervous temperament; very sensitive; always strictly temperate, and has no physical infirmities, though he has suffered from constipation.

During the winter and spring of 1906 patient was greatly

troubled by reason of his son's misconduct in visiting saloons and cultivating undesirable associations with the opposite sex. The boy lied to his father relative to his conduct and absented himself from home. This worried and irritated his father, who spent the greater portion of the night looking about the village for him. On his son's return the following day patient lost control of his temper and struck the boy several times with his cane, though he did not inflict injury. This led to much comment about the neighborhood, the report of the occurrence being in some instances magnified and distorted. Effort was made by one of his trustees to force him out of his pastorate. While the vast majority of the villagers sympathized with him and his family, a few continued to circulate exaggerated reports. This added greatly to the worry and distress under which patient was laboring and is believed to be directly responsible for the development of mental symptoms. The immediate family felt that the criticisms were terribly unjust and offered good ground for patient's worry and trouble.

Onset of Psychosis.—July 9, 1906, patient seemed to be suspicious of people whom he had little reason to believe were involved in his difficulty. Seemed to imagine that everybody was against him; talked coherently, but rather excitedly, and the assurances of his family and friends were unavailing. July 12, following his return from the conduct of a funeral, he maintained that he had been "tried" by people in attendance—"a woman had come to him in tears, seeking to make him break down in order that they might maintain that he was insane." Several similar occurrences were asserted, all with the intent of making him out insane. On Sunday, July 15, he was very suspicious and refused to officiate in his pulpit until, as he said, "people made it right with him—till they changed their opinions." That night he was absolutely sleepless and it was decided to take a vacation during the next few days. Though he showed a few excited symptoms, nothing further of noteworthy character took place until he had reached a hotel in the village of Canandaigua en route to his former home, where his vacation was to be spent. While at the hotel he became excited; talked freely, but irrationally and in a deluded way, his mind seemingly considerably clouded. He was unable to control himself, and his excitement increased to the point of boisterous and noisy conduct. The following morning he became very wild, yelling and screaming, showing much motor restlessness, so that his wife, who accompanied him, could not control him and it was necessary to have him committed at once to an institution for the insane.

In the R.S.H. he presented no physical complex of disease, though he was of a rather slight physique, his general nutrition somewhat impaired and he seemed rather weak in point of muscular development and strength. Mentally he seemed dominated by counter-impulses and suspicions directed against those with

whom he came in contact. He questioned his wife; would not answer the inquiries of physician until his wife sanctioned such replies; often asked her and his attendants in a rather anxious, inquiring way if they were true to him. When allowed to speak spontaneously, his conversation was of a particularly incoherent character, showing marked distractibility. There were hesitation and vacillation in his efforts to attempt any definite act. Occasionally yelled loudly as if afraid, but then exclaimed "I know it's wrong—I promised not to yell—you're not true to me—there is something wrong here." He continued to labor under vague fears and suspicions relative to his surroundings: asserted that the medicine was liquor and spat it out. Given medicine hypodermically, he seemed oblivious of the process: showed distinct memory defects and narrowed grasp. Subsequently it was noted that there was abnormal spontaneity of speech, but that he talked in a rather harping way, repeating the same expressions of doubt and uncertainty over and over. Was in constant fear of treachery and trickery. The following spontaneous elaboration in reply to question by physician that patient should make any statement he chose, indicates his lack of grasp and distractibility:

"You propose to be a witness, do you—you want statements as to my veracity or anything of that kind, or don't you? (Pause) I will give you one thing that might add to the testimony possibly —(pause) let's see—what else do you want? You took my father's name, did you (pause)—at least I suppose that you did —I don't know whether you did or not—I didn't notice (pause) —I'll answer any questions that you like to ask (pause)—I know one thing—I want to ask whether you men are playing fast or loose with Mrs. G. and me or not—in the stage (possibly refers to the coach which brought him to the institution), I saw there might be an opportunity of collusion between the two men."

Orientation was marked by confusion, and his grasp on the immediate past was uncertain. Though he recalled some recent incidents with fair accuracy, others apparently equally important appeared to be absolutely forgotten. There was great difficulty in focusing his attention on questions put to him sufficiently long to bring himself to any attempts at reply, but, when his distractibility was met by frequent repetition and recall to the topic, his replies were usually hazy. He showed distinct sensorial cloudiness and psychomotor excitement, impairment of memory in every field, narrowed grasp and no real insight into his mental condition: spoke vaguely of the thought that people might think him insane. He continued to be controlled by counter-impulses which allowed him to decide and try to act, but after a moment swayed him into exactly the opposite response; thus it was difficult for this reason to induce him to take food, to allow himself to be moved, washed, dressed or cared for. Constantly questioned "Is this right—ought I to do it—are you true—then I

will do it—no, I guess I better not." When urged, became greatly excited and yelled. He gave the impression of being in a hazy, delirious state.

July 23 it was noted that the excitement had increased; that he was completely controlled by doubts and that consciousness was clouded. He would take no nourishment; could not be kept in bed; talked spontaneously in busy delirium and yelled noisily, the following being a sample of his stream of thought under the influence of his excitement on this day:

"Am I right? It's a tester for all eternity—tell my wife and everybody, the doctor and that other fellow—is that right? I am in doubt—is that right—I don't know what to do—go get Helen and my wife. If a priest comes I will confess my sins—is that right—are you true? Now be careful what you do, for it's a test case for all-time—I don't know whether to stay in bed or not (pause)—let me see—is it right—do you hear me? I am in doubt, so I guess I better get up—My God! The whole world knows I am crazy; I don't know what to say—is that fair—are you satisfied? Somebody's going to get hurt, either you or me—no sir'ee, I'll do just as I please; I want to be true to Helen, my wife, the doctor and the whole world. Will I have to stay in here for eternity—I want to be true—are you true, etc."

The following day it was noted that he was becoming weaker under the influence of his busy delirium. Face was haggard. He persisted in refusing nourishment, so that it was necessary to tube-feed him. His axillary temperature recorded 102°. Though he talked continuously, the motor excitement was not of equal intensity with his mental activity. It consisted in slow gesticulations, reaching out his hand, nodding his head occasionally, getting out of bed or sitting up. July 25 projectile vomiting occurred and it was necessary to feed him by nutritive enemata. Pulse recorded 120; temperature 103°. On that day he passed into a semi-stupor state; failing to recognize anyone about him. The following day his temperature rose to 104°. He continued to vomit a greenish, grumous, bilious material. Passed into a moribund state, and died during the early morning hours of July 30.

Autopsy was refused, but so far as clinical observations went there was no infective processes which could be recognized as such.

Case II. H. A. H.—Admitted to Rochester State Hospital August 21, 1907. Discharged by death from organic heart disease in the course of collapse delirium, September 1, 1907. Diagnosis—collapse delirium.

Family History.—Patient was a clergyman, aged 55 years, in whose family a sister was said to have committed suicide, his only son to be a drug-habitué and his daughter at that time an inmate of the R.S.H.

Personal History.—Patient, himself, was well and strong as

a boy. Attended school and college, and took his theological work at the Tufts Theological Seminary. He is said to have left school on one occasion because of fear of nervous breakdown, but no actual nervous or mental outbreak is known to have occurred until the age of 47, when he became suddenly insane following the death of his wife and the worry incident to the waywardness of his son, being confined for about seven weeks in the Concord, New Hampshire State Hospital. He is believed to have been in a sort of delirium, accompanied by some fever at that time. After leaving the hospital was fairly well, though he met with some discouragement in the loss of his charge, and was comparatively inactive for about a year. Since that time he is described as having been a man of nervous disposition, easily irritated and flying into a rage on slight provocation, often assuming somewhat threatening attitudes in his domestic life: at times appeared considerably depressed and discouraged.

Onset of Psychosis.—He preached his last sermon about August 10, 1907. At this time was greatly worried about his son and daughter, the latter being home from the state hospital for a visit. He seemed quite agitated when in association with this daughter and decided to return her to the institution. En route he was very quiet, talking but little; did not eat; occasionally seemed somewhat uneasy. When spoken to did not always appear to comprehend. Went to one of the local hotels, where he complained of feeling hungry and went out for a lunch. On his return to the hotel, when greeted by his daughter, who put her arms about his neck, he immediately became excited; he drew himself up in a rigid manner, his face becoming distorted; gave way to screams and groans which were continued for some time. Subsequently, though usually quiet, whenever his daughter was near him or whenever she was spoken of in his presence he continued to have outbursts somewhat similar to that previously described. These attacks would subside quickly, but his conduct created considerable disturbance at the hotel, so that it was necessary to commit him to the state hospital as an emergency case.

When brought to the institution, his face was flushed, hair and clothes awry and he seemed somewhat exhausted. He sat resting his head on his hand and seemed preoccupied. He replied to questions with seeming correctness, however, and explained the meaning of his presence in this city, admitting that he had become somewhat excited over family affairs. He was compliant, but on the ward in an attempt to bathe him he suddenly assumed a characteristic rigid attitude, his face again being drawn in contortions, and he yelled loudly. This outburst subsided quickly, but, when questioned, he said he did not seem able to control himself, immediately assuming a rigid posture again and screaming loudly. These attacks were repeated frequently, and

in bed he would roll backward and forward, throwing his arms about wildly, yelling and screaming, holding himself stiffly, then relaxing and becoming quiet for a few moments and speaking in a fairly appreciative way; thus, following one of these attacks, he said, "I didn't know where I was—I thought when I was going into that bath that I was in eternity." His conduct and condition continued about as noted throughout the following day, and, if his daughter's name was mentioned, he would make attempts at assault, for which he apoligized later, explaining that he was unable to control himself. There seemed to be considerable difficulty in collecting his thoughts, but during his quiescent periods his attention could be gained and he replied with considerable show of appreciation. His episodes of excited and delirious conduct continued at intervals, during one of which, on August 23, he threw himself from the bed to the floor, bruising the tissues about the right knee and thigh. He would not permit any physical examination, but his pulse was rapid (118), and his temperature, when taken, recorded 99°. He took nourishment sparingly and bowels were very sluggish. When efforts were made to care for him he was quite demonstrative; groaned; was resistive and threw himself about. On August 26 showed some tendency to be nauseated. August 30 it was noted that there was urinary retention, and his bowels were moved by cathartics and enemas. He was quite uncommunicative, but groaned and screamed when attempts were made to question him. During the morning of that day he repeated a number of times, "I can't make you understand—Oh my father—he always loved me." Asked why he did not eat better, asserted that he was "in the third world," but would offer no further explanation as to what he meant. Later he said, "I am crazy—I am in the wrong place—if I could only get the little ones." Seemed to recall some of the incidents of his past life and muttered in a rather reminiscent strain. Stated that he was born in Nantucket on the thirty-first day of December, 1851, and that he was 55 years old. Explained how he came to Rochester, to what hotel he went and that while there he had been taken acutely ill, and that he was then taken to the state hospital. Maintained that the "devil had taken him down below where no telegram or communication could be had; that there were animals in the room crawling around; that he did not want to be here in women's clothes." On another occasion, when asked how long he had been in the hospital, replied "one million years." Usually he gave but little heed to questions. On August 31 he permitted examination of his chest, which did not reveal any heart murmur, though the sounds were rapid and weak. The following day, on September 1, his excitement had subsided in large measure, though he was still resistive and somewhat noisy; seemed to be exhausted; continued to experience retention of urine, but took small quantities of nourish-

ment. In the evening his pulse began to fail rather rapidly and his respirations became labored. This was accompanied by profuse perspiration. He sank rapidly into a semi-comatose state, and some two hours later death ended the scene.

Autopsy revealed thickening of the tricuspid and mitral valves of the heart, with some flabbiness of the cardiac muscle, congestion of the left kidney and slight injection of the blood vessels of the small intestine; otherwise the post-mortem findings were negative.

In the next case it will be noted that the development is distinctly manic in character, and that it varies greatly in point of possible etiology from the preceding, though neither gives a suggestion of infectious or toxic origin. Not only in the progress of symptoms in the development of the psychosis, but later under observation in the hospital, the classic picture of manic excitement is presented, with emotional elation, flight of ideas with pressure of activity, in which the movements are purposeful and in entire keeping with the rapidly changing content of thought, distractibility and tendency to momentary elaboration of jocular character on occurrences in the surroundings; facilitation of word and thought associations, one word or thought suggesting another, all with relative clearness of the sensorium. These features justify the diagnosis of manic-depressive insanity, and, as the case progresses, the excitement constantly increases with ultimate evolutionary changes in the character of the symptoms to clouded sensorium, purposeless activity and fulminating delirium, collapse and death.

CASE III. J. M.—Admitted to Rochester State Hospital August 22, 1910. Discharged by death due to acute delirious mania, September 1, 1910. Diagnosis—manic-depressive excitement.

Family history.—Patient, a man of 53 years, presented heredity in a brother who had suffered from an attack of melancholia, but who made a good recovery. Insanity in a maternal cousin.

Personal History.—Patient, himself, was healthy as a boy, and it was asserted that he had never consulted a doctor prior to present illness. He obtained a common school education. His principal occupation had been that of a cartman; was industrious, active, social and of a buoyant temperament; a man of good morals and of religious inclinations. He is the father of two girls, both of whom are rather nervous in their temperaments. Patient, himself, always temperate.

Onset of Psychosis.—July 21, 1910, with his brother he decided to take a trip to New York which had long been contemplated and which was, in his history, a unique experience. In New York he lost much sleep by reason of the presence of vermin in his bed at the boarding house. It is denied that he drank, but took a large amount of exercise during a very hot period. Ate

irregularly. Was very much interested in the things that he saw and undoubtedly overtaxed his strength. On his return home after an absence of about a week, he seemed unusually happy and talkative; laughed more than usual; spoke, as was perhaps natural, a great deal about his trip and what he had seen. Within two days after his return home he attended church, where he seemed to be greatly affected by the sermon, giving way to a period of weeping. After church he maintained that everything in the sermon referred to him. On his way home he seemed excited and said that God had performed a miracle and had given him light; that he had never understood things so well before in his life. Somewhat later in the day he called the family into his room and talked with them about the miracle which had been performed. At that time was excited and absorbed in religious ideas. The family was alarmed at his condition, and patient was annoyed by their attitude; denied that he was nervous and attempted to demonstrate such assertions by reading a chapter from the bible, which was correctly rendered. On the Tuesday following he appeared to have partial insight into his condition and said that he talked too much, requesting his wife to interrupt him when he did so again. Later in the day, however, he became controlled by excitement. Went out for a walk and talked to various strangers in the park; gave money away foolishly and without solicitation; said that a light which had come to his bedside had given him the power to offer the blessing of God to everybody; talked a great deal about the Bible.

After temporary improvement on August 12 he exhibited evidence of intensification of his symptoms; threw a towel into the ash barrel; talked incessantly about his trip to New York, being seemingly confused and irrational in his statements. Was very active and very troublesome; prayed a great deal; was on the move constantly. Friday night he lighted the gas in the middle of the night; played on the piano; talked loudly to one of his former friends, now dead; spoke as if in conversation with imaginary people; sang, laughed and was boisterous. Went downstairs and filled the tea kettle, saying it was time to get breakfast; sent imaginary telephone messages without the medium of wires; went into the street in his night clothing; threw water on the table and on the floor; pulled down the window curtain; threw his watch at his sister-in-law and broke it, being controlled by pressure of psychomotor activity, leading him into a multiplicity of mischievous acts. The police were summoned and he was sent to the County Hospital, where he remained in a very excited state for a week prior to his admission to the R.S.H.

In the state hospital at first he was controlled by considerable pressure of activity. On admission, though able to sit in his chair, he did not give more than momentary attention to physician and was distracted by his own thoughts and ideas. Spent con-

siderable time slapping imaginary bugs on his clothing; stamped his foot on the floor; scratched his head; bent forward in his chair and lifted up the edge of the carpet to peer underneath, all in overdrawn, playful pantomime; gave no heed to the examination. When addressed, he was able to give his attention instantly to the physician. Stated that he had been driven out of Buffalo by the bed bugs and that he was crazy. His replies and attitude were distinctly flippant. Talked loudly and garrulously, showing some tendency to flight of ideas. As he passed to the ward he observed three pillows on the settee and commented thereon as follows: "Three in one or one in three," evidently referring to the Holy Trinity. Throughout the night he was very excited and troublesome, climbing out of bed, rolling his bed-clothing up and scattering it about the floor, removing his bed garments, etc.; talked incessantly in a rapid and distracted flight, so that it was impossible to draw him into any intelligent conversation. It is noted that his flight was of a remarkably excited character and accompanied by great pressure of activity.

On August 24 he is noted as remaining under great pressure of psychomotor excitement, constantly getting into mischief, pulling his bed to pieces, throwing his sheets out of the window, talking in a rapid, but nonsensical, manner and responding to the remarks made by other excited patients about him. On August 25 he was in a state of hyperactivity, tearing his bedding to pieces, shouting and talking loudly. He was taken to the veranda where the following spontaneous remarks show his typical flight of ideas and distractibility:

"I must put my feet on where I like to smoke—the way they do in the Whitcomb House (pulls his chair to the edge of the porch and elevates his feet on the wire guard—continually occupies himself with what is passing about him). Have you got a handkerchief—give me a handkerchief—well, never mind. My head hurts where I bumped it. I guess I'll rub it (rubs it vigorously, but then suddenly ceases). No I won't, it hurts. There I have got to stop again. What do you do—spit on the floor? (Pause) I want a button—a sample button; they cost about five cents a dozen—that's cheap enough. Oh, for the rich—I might make them give me one hundred thousand dollars for the poor—(distracted)—Oh that head where I fell on the floor—(he is not known to have fallen on the floor and his head presents no evidence of bruise). I have got to spit again—shall I spit on the floor? (When directed to do so, expectorates through the porch guard). Father Steward used to say—no, that's what the damned Irishman used to say. Did you meet Father Steward? He was a fine man. He was neither too fast nor too slow. He never drove too fast nor too slow—just fast enough (pause—distracted). I am going to give you a new book—a New Testament. (As he sits surrounded by the other patients who are also ex-

cited, he takes up their expressions and elaborates on them from moment to moment; thus, when one of the patients says, "I have a Dickie bird and I can make him sing," Mr. Meulendyke says, "Well then, make him sing—why don't you make him sing then; (pause) why didn't you speak out where you live? (Patient) "I live in Dansville." (Mr. M.) "Well, why didn't you stay there?" (Patient) "Do you know John?" (Mr. M.) "Where does he live?" (Patient) "Dansville." (Mr. M.) "I have heard of him." (Patient) Do you know ———?" (Mr. M.) "No, I forget, are my feet in your way?" (He pauses for a few moments and appears to be in a listening attitude).

On August 29 his excitement had intensified somewhat. He was mischievous and troublesome; pulling his bed to pieces, kicking and getting out on the floor, putting his feet against the wall, disarranging his bedding and refusing to remain covered, being in a state of constant psychomotor activity of extreme grade. Under the influence of this continued excitement he lost considerably in point of weight and strength, but he took food well, and at night under the influence of hypnotic a fair amount of sleep was secured to him. At that time he was unable to engage in any conversation owing to the intensification of his excitement and the approximation of delirious clouding of sensorium. He gave no heed to passing occurrences, lying most of the time with his eyes closed, giving rise to short exclamations as follows: "Oh! Oh! Yes I will! No! Ah! Ah!", etc.

September 1 he had grown perceptibly weaker and during the night had two periods of vomiting. On that day the abdomen was considerably distended and patient seemed to be in a pseudo-delirious condition. Seemed to flinch on palpation over the abdomen and exclaimed as if in pain. No localizing symptoms. Face pale and rather pinched; pulse regular, but weak. It was necessary to catheterize him, the urine being very highly colored. His bowels were moving freely. Temperature recorded 101.2° per rectum; pulse 100; respirations 24. Throughout the day his abdomen continued distended and he seemed to be in acute distress. Though unable to talk, he moaned and groaned continually and pressure over the abdomen seemed to give extreme pain. He was restless, thrashing about the bed. Was given stimulants and enemata in the hope of relieving tympanites. At four o'clock in the afternoon his temperature recorded 102.8° per rectum. At 5.15 p.m. he suddenly passed away. *Autopsy* was refused.

The next case presents equally strong evidence of manic development in view of the unusual heredity of manic-depressive insanity noted in direct and collateral branches of the family. Our present-day studies tend to show, in many instances, familial types of psychoses especially of manic-depressive character. This case belongs to a family in which this tendency to manic-depressive psychosis is specially noteworthy, and this fact, together with

the development and brief clinical picture, tends to point to such a diagnosis.

CASE IV. C. S. R.—Admitted to Rochester State Hospital November 23, 1906. Discharged by death following convulsion, November 24, 1906. Diagnosis—acute delirious mania.

Family History.—Patient presents marked hereditary influences, a large number of the immediate relatives having been inmates of Rochester and other state hospitals, the usual form of psychosis presented being of the manic-depressive type. His father, a manic case, has been an inmate of the Rochester State Hospital on several different occasions and is now (1911) again under treatment at that institution. A paternal uncle was insane and a paternal aunt committed suicide while in a state of temporary mental depression. A paternal uncle and aunt were inmates of the Willard State Hospital. Another paternal uncle has locomotor ataxia. Paternal grandfather was demented during the last ten years of life. A paternal great-uncle also manifested senile deterioration. A maternal cousin was an inmate of Brigham Hall. There is also history of cancer and tuberculosis in a number of members of the family.

Personal History.—Patient, himself, was a young man of eighteen years. Strong, healthy and athletic; a high school boy and one of the most popular members of his class, his intellect being described as unusually keen; a member of the high school baseball and football teams. The history given by the pastor of his church states that the clergyman "had never known a young man of better instincts." During the summer preceding admission he had been under the doctor's care for about two months, complaining of liver trouble.

Onset of Psychosis.—Three weeks prior to admission patient appeared rather eccentric. Gave up his work and insisted on attending the local high school, where he upset the equanimity of the institution. Two days prior to admission he became greatly excited. Was allowed to follow his own bent and lacked ability to direct his conduct in proper channels. Said he was going to a dance, and nothing further was heard from him by his friends till the following morning when he was found lying in a ditch beside the railroad track. He appeared to be suffering somewhat from exposure. He was taken to a general hospital in his village from which institution he is believed to have escaped and wandered a distance of ten or fifteen miles. Again taken into custody, he was in a great state of activity. At the station wrote and dictated numerous telegrams to imaginary people in various parts of the country; then gave his attention to the telephone, and sent in a variety of calls, keeping up a running fire of conversation. He then went to the office of a local manufacturing company, where he again took possession of the telephone, so that the manager was forced to call a constable. He assaulted the constable, and

owing to his active and athletic proclivities it required several men to control him. Placed in the village lockup, he broke the windows and furniture, destroyed his clothing and assaulted the authorities, so that he was allowed to remain in filth and cold without proper warmth or protection from the cold weather.

On admission to the hospital he was in a somnolent state, having been brought in under the influence of a narcotic. *Physical examination* revealed a remarkably well developed and healthy appearing physique. The pulse and heart were strong and entirely competent. He was in a dirty condition, but no physical anomalies were noted. After several hours in the institution he began to show signs of restlessness and continued to become more and more excited from that time forward. Talked rapidly in a rambling manner; was quickly distracted by occurrences about him. First would ask questions and give momentary heed to passing occurrences, but would not stop for reply, and then passed rapidly from one thing to another. Hearing the yells of other patients near him, he expressed the hope that he would not be killed. Was elated and expansive relative to his physical prowess; demonstrating the size of his forearm; becoming ultimately so excited as to be practically uncontrollable, tearing his bed to pieces, yelling and screaming, so that all movable articles were taken from his room. He was treated by prolonged baths, and was noted throughout the day of his admission as laboring under "hyperexcitement of a most intense degree," talking so rapidly as to be scarcely understood, swearing, singing, whimpering and occasionally struggling violently, so that several attendants were required to care for him. The following is a sample of his *spontaneous flight* of ideas taken while he was in the bath:

"Our Heavenly Father, have I got any friends at all in the world?" "I haven't proven a thing—I haven't proven a God damn thing," (speech is so rapid as to be scarcely understood). "Ah! Can I go to Rochester to the East High School? Thank God, I went to church last Sunday and put five dollars on the contribution plate. . . . Our Heavenly Father—(distracted)—break the damn thing quick." (At this juncture becomes intensely active and struggles furiously in the bath, splashing the water all about the floor, yelling and screaming loudly, saying: "Don't put it in my mouth—oh my head is under water," etc. (although every attention is given to him that no water shall get into his face; then suddenly begins to sing) "I never done nothing to nobody no time"; (then yells and howls at the top of his voice. Continues his excitement, at times lying quietly and talking rapidly in a moderately high-pitched voice; at other times whining and sniveling and at still other times shouting in the manner described. Suddenly he begins yelling loudly) "Oh, I can't open my eyes"—(then sings) "Once I was blind, but now I can see—and Jesus

Christ is a God damned fool—I want to see the people—will anybody send a card in? Ah, will you help me—take hold of my foot—give me a chance to telegraph—they won't give me a chance to telegraph—they won't give me a chance to telegraph. Heavenly Father, if you will let me out I will go right out on this mattress and go to sleep—they are killing me; they are drowning me—Mr. Burke, will you help me. They took and doped me last night—let me out—break a window and let me out—let the Sodus High School come up here a minute—I always loved that school. I will stay right in this place till the car comes to Rochester—is that fair? Go on out, will you please, Bill?" (Then becomes quiet for a moment.) "Who was down at Sodus Point last night? Is Hattie Percy anywhere in the audience?" (Raises his voice) "Where is George . . . etc., etc."

While in the tub the following morning, without warning the patient suddenly passed into a convulsive state, characterized by generalized clonic spasm of the muscles of the abdomen and lower extremities, and to a less degree of those of the upper extremities, face and neck. These clonic contractions were of a particularly fine, vibratory character, and none of the commonly observed coarse jactitations, with foaming at the mouth of an epileptic, were noted. He was at once removed from the bath and placed in bed. Subsequently he was comatose. Was observed frequently by physician and attendants. His pulse was very rapid and throbbing, though full and regular; conjunctivæ insensitive; pupils regular, moderately dilated and without response to light; respirations stertorous. About half an hour following the convulsion during one of the numerous examinations which were made by writer following the fit, the pulse was found absent at the wrist. In listening over the heart, the rhythm was very feeble, but rapid and regular, recording 150 or 160. Patient appeared to be in a state of collapse. Active stimulants of strychnine, normal salt solution by hypodermoclysis, etc., were administered, but without result and patient died about 4½ hours following the fit.

In the last case recurrent attacks were noted, the exact nature of which cannot, of course, be stated; but, in view of the manifestly complete recoveries which followed each period of mental upset and the description of acute excitement followed by dullness, apathy and retardation (probably depression), the impress of the manic-depressive character of the psychosis seems evident. The development of the terminal psychosis, which was studied by us, was essentially manic, and in the hospital the abstract shows clearly the tendency to flight of ideas, pressure of purposeful psychomotor activity, ability to understand questions and tendency to trifling and flippant replies, dramatic attitudes, distractibility, etc., all pointing in a similar direction. He received many severe bruises in the course of his activity, especially about the limbs, and it is believed that the thrombosis of the left

iliac artery was due to arteritis as the result of injury. In this case, as will be noted, autopsy findings to account for the remarkable temperature (108.6° one half hour before death) and the fatal ending are entirely inadequate.

Case V. G. L. McG.—Admitted to Rochester State Hospital July 8, 1907. Discharged by death from acute delirious mania and gangrene of left leg, July 16, 1907. Diagnosis—manic-depressive excitement.

Family History.—Negative so far as nervous or mental diseases were concerned.

Personal History.—Patient is a young man of 27 years. Had always been healthy and vigorous as a boy; bright and intelligent, graduating from high school between the ages of 18 and 19 years. Shortly following graduation, volunteered as a soldier in the Spanish-American War; stationed at Camp Black, where he suffered sunstroke, though the particulars of this instance are not known to our informant—he was not thought to have been seriously affected, however. In 1899, following his return home from the army, he seemed somewhat sallow and had lost flesh. A few days later, while at home, a few mental symptoms were noted, when he jumped suddenly from the veranda, ran into the street and lay down in the middle of the road. Taken into the house and placed in bed, he was rambling in his talk and restless. Physicians who were called diagnosed the condition at that time as meningitis, which they thought had been caused by the sunstroke. He was sleepless, and in his elaboration talked of his army and school life. His attention could be gained by speaking loudly to him, but he was very distractible and would talk of other things, being unable to keep his mind to one topic for more than a moment at a time. He remained ill and confined to bed the greater portion of the time during a period of several months. Following his acute excitement he is noted as having been somewhat dull and rather apathetic, so that it was hard to get him started in his eating or in his movements about the house; had but little to say.

He appeared to make a good recovery. Took up the teaching of stenography in a night school. Some two years later entered a law office where he worked and studied, and two years later passed the examination for admission to the bar; opened a law office in New York city. Was interested in politics and ran for the position of alderman, though he was defeated.

Shortly after his election experience he again suffered from a mental attack, which is said to have been quite similar, but less severe and of shorter duration. In both instances it was possible for him to be cared for at home. Following an apparently complete recovery from this second mental attack he obtained a position in the law department of a New York insurance company,

demonstrating his ability by working up till one of the best positions of the department was assigned to him, and this position he held until the onset of the terminal psychosis. He was described as having been temperate, reliable and industrious; social and of buoyant temperament.

Onset of Psychosis.—On July 5, 1907, without assigned cause patient suddenly appeared to become excited. He was restless; talked incessantly in a rambling and incoherent manner. He was brought from New York to Rochester, but on the train was greatly excited and talkative, so that it was necessary to hold him in his seat much of the time. Passed from topic to topic in the most uncontrolled manner in his spontaneous talk. On his arrival in Rochester, his manner was theatrical; spoke in an oratorical way, though his speech continued to be of a drifting, incoherent character. Within a short time he became noisy, yelling, shouting at the top of his voice; threatened to jump out of the window; assumed a somewhat threatening attitude; broke away from his father, who was attempting to care for him, and ran into the street in scanty attire. In the street continued to yell, running rapidly back and forth near the house, so that it was necessary to call the police in order to secure his return to his home. Continued to be quite noisy for two days following his return to Rochester, and on the third day it was decided to commit him to the Rochester State Hospital. At that time it was noted that he had not slept since his arrival in Rochester, and he complained of severe pain in the occipital region.

In the hospital he was observed to be a well-built young man, with flushed face, pupils dilated, and he was laboring under considerable excitement. He had some difficulty in giving certain data relative to himself, as it seemed hard for him to recall. Appreciated the nature of the institution, however. While in the office he broke away from the attendants, jumped from his chair and lurched forward, so that it was necessary to hold him constantly during the interview; talked incessantly in an incoherent and rambling manner. Conduct was quite dramatic. The following is a sample of his *spontaneous stream of thought* at this time:

"Rochester, Rochester—piece of sand—there is the Rochester Insane Asylum. Oh God, what a record—what in hell have I been doing—why don't I bang my head against the wall and wake up. Oh dear! Oh dear! Oh dear! When I play chess again—oh, for a little bit of dynamite—blow the thing up." (Suddenly brings his hand down heavily on the floor.)

Taken to the ward and placed in bed, he threw himself about; sat up; was very restless; would roam about his room much of the time, declaiming in dramatic attitudes. He showed typical flight of ideas. His attention could be gained by speaking sharply to him, but could be held but momentarily owing to his distractibility. The following spontaneous speech shows typical psycho-

motor flight, and the appended questions put to him two days following his admission indicate his degree of excitement and the flippancy of many of his utterances, while at the same time indicating good grasp on the questions put to him, but marked distractibility and pressure of ideas.

"Send in my father—W. J. McG.—he can't be far away—now I will be civilized—now I do this every morning. (Jumps up and down rapidly on the springs of the bed; then observes a nurse passing the door and shouts) "Don't bring a crowd of boys—halt—halt—I don't receive anybody except Oxford men—I am 27 years old—now just keep still. (Stops and appears to be listening intently.) Now, that was it—now the Irish have the wires—now I need my ears open—are you Walter McK.?"

What place is this? "Rochester State Hospital (distracted); this is a little stunt I have to do to get a breakfast here—in London we get a milk punch before we get up. I have been decently treated here—we had something in our family. If that Thaw—I'll try his case for him if he is a good boy."

When did you come here? "I came here last night—night before last—night before that—four days." (Incorrect.)

What has been the trouble? "I fell in love—that is my way of falling in love—chestnuts. Her father wanted a quiet man, so I became a London dude. (Points toward examiner, then to the attendant and then to himself and says) Three brothers here. (Then becomes distracted and assumes an attitude of listening; then speaks irritatedly) Get off the wire. (Then is again distracted by another patient speaking outside his room, and says) Stop it—don't you see that a man that goes over in a corner gets very energetic. (Distracted again, and begins to rub his head vigorously with his hands.) Wash my head."

Is your home in Rochester? "My people, my father, mother and sister live there."

What day is today? "I don't know except there are three of us here—it might be Sunday." (It was Wednesday.)

What month is it? "Same old month—change the month—change the month."

What do you want to do? "I want a vacation—get off duty—I want Kim."

Who is Kim? "I never make up," . . . (Reply completely irrelevant.)

Have you been sick? (Does not reply to question, but begins to hum; this he keeps up for a minute or so; then he stops and the question is asked "what does that mean?") It means touch those wires—see what you get—shake hands—shake hands. (Reaches out his hand to shake hands with the examiner and then with the attendants.) The next thing you'll ask me is what I want—next a glass of punch, . . ."

Do you know who George Cohen, the actor, is? All Cohens

look alike to me— I am G. L. McG. I am going to try the innocent and condemn the criminals." (Continues to elaborate in a singing fashion, improvising a tune of a simple character.)

What did you do in New York City? "I was in the New York Fidelity and Casualty Company. In July I just went crazy with the heat."

Were you in the army during the Spanish-American War? "The Seventh Battery, . . ."

Where were you located? "Long Island," etc.

He continued to get rest only under the influence of sedatives, being restless and uneasy, throwing himself about on the floor and against the bed, with the result that severe bruises were noted on his skin. Bowels were active. He took nourishment fairly well, but on several occasions knocked the tray containing his food to the floor and refused to eat anything.

On July 16, one week following admission, it was noted that he continued to be in a state of excitement, though through the administration of sedatives the intensity of its character had lessened. He was kept in bed, and in a restraining apparatus a portion of the time. He talked almost constantly unless under the influence of sedatives. On that day he developed a high temperature (104½°). A physical examination revealed the fact that the left foot was somewhat colorless and apparently there was almost complete loss of function at the ankle joint. The toes were cyanosed, and on the outer side of the ankle there were several blebs containing bloody serum. The surface temperature of the foot and ankle on the affected side was colder than that of the opposite member. No abnormality of chest or abdominal organs was noted. Patient was very restless, tossing and throwing himself about, so that it was necessary for an attendant to be constantly near him. He talked continuously in a rambling, but rather weak voice; seemed somewhat exhausted. The affection of the left foot and ankle showed a tendency to extend up the leg, and the blebs increased in size. The bowels were moved by enemata. His condition continued to grow worse throughout the day, and during the afternoon he passed into a condition of coma. *Physical examination* failed to reveal abnormality of the heart or lungs. The pulsation of the right femoral artery could be distinctly felt, but no pulsation could be detected in the left femoral. The left leg at this time showed a duskiness extending from the hip to the knee, while the discoloration from the knee down had become more marked. There was moderate cyanosis of the right leg as well. About one half hour prior to death at 8.30 p.m. on the sixteenth of July, the axillary temperature recorded 108.6° F.; pulse 106; respiration 33.

Autopsy performed two hours subsequent to death showed the left iliac artery about 2 inches from the branching of the

aorta to be occluded by well marked blood clot traced downward below Poupart's ligament into the femoral artery. No injury of the vessel wall could be detected, and no evidence of an embolus could be found. The right iliac artery was free of clots. No cardiac anomaly was noted, nor were there noteworthy findings in the brain, aside from some adhesions binding the temporal lobes and a slight injection of the pia vessels.

It is emphasized, in conclusion, that while it is not our purpose to attempt the assertion that manic-depressive insanity *per se* is ever attended by climax in the nature of fulminant delirium (our own observations being too limited and added studies by other students in psychiatry essential), precedent for such thought may be entertained in the status epilepticus, which forms the true climax of the epilepsies; but it is urged that, so far as our studies justify an opinion, fulminating delirium may form such climax in several types of alienation, including dementia præcox and manic-depressive insanity, wherein no reasonable thought of exogenous factors can be entertained.

And finally it is suggested that special attention be given to all fulminating forms of delirium occurring in institutions for the insane, in an effort to determine these issues, having due regard to all apparent exogenous and endogenous causes, and holding these several varieties of collapse deliria to the groups in which they manifestly belong.

Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY

January 2, 1912

The President, Dr. L. Pierce Clark, in the Chair

THE NEURO-SEROLOGICAL FINDINGS IN TABES, GENERAL PARESIS, CEREBROSPINAL SYPHILIS AND IN OTHER NERVOUS AND MENTAL DISEASES

Dr. D. M. Kaplan and Dr. Louis Casamajor presented a paper on this subject, which the authors stated at the outset was essentially the record of a laboratory equipped for serological work. The paper did not concern itself with the post-mortem findings, nor did it attempt to discuss the clinical distinction of the diseases scheduled. The material was obtained from the New York Neurological Institute, and, in a measure, from the Manhattan State Hospital. It was the interesting work of Plaut that had shown the necessity of a more definite laboratory knowledge of tabes, general paresis and cerebrospinal lues.

As the result of the investigations of Dr. Kaplan and Dr. Casamajor, which were based upon an examination of 340 cerebrospinal fluids and as many sera, the following conclusions were offered:

1. That there was a diagnostic and prognostic value to be derived from neuro-serological studies.

2. Negative cell counts, as a rule, excluded diseases classified among the positive types, and *vice versa*.

3. The hyperlymphocytic and positive serum Wassermann types of tabes were the ideal forms of this disease for successful treatment.

4. It was permissible to argue that this hyperlymphocytosis was the expression of an exudative process.

5. The presence of large numbers of polynuclear cells in the spinal fluid was significant of an acute meningitic process, be it luetic or due to any other cause.

6. The diminution or disappearance of polynuclear cells was to be considered as a favorable prognostic sign.

7. In a child with meningitis, the presence of a substance reducing Fehling's solution in the cerebrospinal fluid spoke strongly for the tuberculous nature of the process.

Dr. Smith Ely Jelliffe said that so far as he had been able to follow and digest the admirable paper of Drs. Kaplan and Casamajor, it seemed that their findings substantiated in large part the claims made by Plaut in his monograph which was translated by Dr. Casamajor and himself. It also showed that the four-phase reaction was an extremely valuable addition to our diagnostic methods, and that one is not justified in relying upon close clinical study alone in the differential diagnoses of these closely related forms. He regretted that no mention was made in the paper about

the differentiation of manic depressive and schizophrenic psychoses from those very similar psychoses which may develop on a syphilitic basis. Undoubtedly the material at hand was not adequate.

The speaker said he had hoped that Dr Kaplan might have said something regarding the technique of these various serological tests, because in the short time that he had been interested in this work he had received from different laboratory sources reports upon which he could not rely, so that insistence upon a reliable technique was a point that should be accentuated. He had come to feel that the original Wassermann methods should be followed in practically all cases, as the unreliability of the many variations of that test was being increasingly demonstrated, thus again emphasizing the contention of Plaut to that effect in the work mentioned.

Dr. Jelliffe then referred to the work of Hauptmann, who showed that the use of increasing amounts of spinal fluid resulted in a corresponding increase in the number of positive reactions in cerebrospinal syphilis, in tabes, and at times in multiple scleroses. This could be interpreted as an extremely disquieting finding, and the speaker said he would be glad to learn just what its significance was. If, with an increasing quantity of serum used in the test there were obtained numerically increasingly positive reactions in both spinal syphilis and in tabes, we had an extremely difficult and intricate question to grapple with. It had also been shown that in multiple sclerosis, the use of larger doses of spinal fluid gave an increasing number of positive Wassermanns, while with the Müller variations of the Wassermann method it would appear that with increased amounts of fluid, practically normal sera gave positive reactions at times. In trying to arrive at a correct solution of this problem therefore the technique employed should not be lost sight of, and the quantity of spinal fluid used had a very important bearing upon the findings.

Dr. Morris J. Karpas said that through the courtesy of Dr. William Mabon, Superintendent of the Manhattan State Hospital, and the Medical Board of the New York Neurological Institute, he, together with Drs. Kaplan and Casamajor, had the opportunity of making a special study of the serological, cytological and chemical content of the cerebrospinal fluid and blood in mental diseases. Of the 300 cases available for their investigations, they had utilized only 200. The speaker said that in his present discussion, he would restrict himself to the general paralytic group, which was the most interesting, inasmuch as specific results were obtained. They had 100 cases of general paralysis; 72 of these were fully developed and 21 were in the last stage. There were seven other cases of general paralysis in which the diagnosis was perfectly clear, while the laboratory findings were rather paradoxical. Of the 72 fully developed cases, 49 showed a positive Wassermann test in the blood and fluid; globulin was abnormally increased, and lymphocytosis was invariably present in all cases excepting in one instance, where the lymphocyte count was only three. In seven cases the Wassermann test was only present in the blood; not in the fluid, and in two cases, globulin was absent. Lymphocytosis was demonstrable in all cases. In four cases the blood was not obtained, but the fluid revealed a positive Wassermann, and globulin and lymphocytosis were present. In nine cases the blood was negative, but the serum positive; in one case globulin was present, and in another globulin was weakly positive. Lymphocytosis was elicited in all these cases.

In the last stage of general paralysis there were 21 cases, fourteen of which gave a positive Wassermann in the blood and fluid: in seven the

Wassermann was negative in the blood, but positive in the fluid, which conformed with the view of the French school. In one case the Wassermann was negative both in the blood and fluid. In the majority of these cases, lymphocytosis was fairly marked. In several of the cases the laboratory findings did not bear out the clinical diagnosis, but in one of these the autopsy supported the laboratory report.

Dr. Karpas maintained that an examination of an organic case of mental disease was not exhausted without a complete cytological, serological and chemical report, and with all due respect to the clinical laboratory, he felt that in the present state of our knowledge one was not in a position to regard it as the ultimate court of appeals for settling disputed diagnoses in borderline cases of organic psychoses or obscure nervous affections. It was always important to take into consideration the development of the disease, the clinical phenomena, etc., in conjunction with the laboratory report.

Dr. William M. Leszynsky said that in his hospital work he had found a study of the cerebrospinal fluid of more value from a diagnostic point of view than the study of the blood.

So far as private practice was concerned, the speaker said he had been misled a number of times by the reports he had received regarding the Wassermann serum reaction, whether positive or negative, and had therefore lost confidence in its value. While these studies were carefully made by competent men and were apparently accurate, yet the interpretation of the reports as compared with the clinical findings was often extremely difficult. In one case the report came in absolutely negative. The patient was a young woman who showed no clinical manifestations of syphilis and in whom he had no justification for suspecting its presence. After she had been under his care for several months he learned from the physician who had charge of her some years ago that she had suffered from florid syphilis five or six years before. In spite of the negative Wassermann in this case, he advised antisyphilitic treatment, but the patient had a sudden attack of apoplexy, and died within six hours. In another case where one of the eye muscles was paralyzed the patient was put on antisyphilitic treatment in spite of a negative Wassermann, and made a prompt recovery. Of course, the finding of a positive Wassermann is frequently of confirmative value, but this depends upon the accuracy of the report.

The speaker said he was opposed to doing a diagnostic spinal puncture in ambulatory patients, as the procedure was at times followed by severe headache, nausea and vomiting, and other unpleasant symptoms.

Dr. Charles L. Dana said he had been familiar with the work of Dr. Kaplan; he appreciated the fact that it had been carefully done and was extremely important, and he thought the results would impress upon the pathologist the value of the four-phase system of investigating syphilitic and parasyphilitic diseases of the nervous system. The result of a single examination of the blood or cerebrospinal fluid was practically worthless from a diagnostic standpoint. The four-phase formula, however, was distinctly helpful in the diagnosis of general paresis and in cerebrospinal lues; the cell count was the most important single feature.

Dr. Dana thought that this entire question would have to be revised a year or two hence: the methods of testing would probably undergo a change, and the four phases mentioned by Dr. Kaplan might be either increased or reduced in number. The variability of the results at present reported were probably due, not to the character of the disorder, but to the

character of the laboratory methods. Personally, he had been impressed by the fact that the more accurately these tests were made, the closer did they bring together the various manifestations of cerebrospinal lues and of parasyphilis. A careful perusal of Nonne's recent article shows that the formulæ for cerebrospinal lues and paresis were very nearly the same. We are accustomed to say that tabes is practically the same disease as paresis; the four-phase studies, however, show that there is a closer connection between paresis and cerebrospinal syphilis, than between tabes and paresis.

Dr. Louis Casamajor said that when he and Dr. Kaplan undertook this work, they had selected, as far as possible, typical cases, with the idea of determining the findings in cases that were more or less certain in order to set a standard for future investigation. Of course, the tests were also made in many doubtful cases, and in a large proportion of these the diagnosis was established by the laboratory findings—in how many the speaker could not say.

Dr. Casamajor agreed with Dr. Leszynsky that lumbar puncture was frequently followed by severe headache and other disagreeable symptoms, and that the patients were better off if they were allowed to lie down for a time after the procedure. The ill effects of it were especially noticeable in cases that were not syphilitic or metasyphilitic. Alcoholics notably suffered after spinal puncture; also patients with arteriosclerosis and those with high blood pressure. Personally, he was not in favor of doing spinal puncture in the office.

Dr. Kaplan, in closing the discussion, said Nonne emphasized the fact that in genuine parasyphilitic nervous diseases, it was a well established and unanimously accepted dictum that they all showed a more or less pronounced pleocytosis. That clinically, hard and fast rules could not be laid down was evidenced by the fact that eleven out of 167 cases of uncomplicated tabes showed a negative result with every one of the four reactions, namely, the Wassermann reaction on both the sera and spinal fluids, the globulin test, the cell count and the Fehling test.

Dr. Kaplan, replying to Dr. Jelliffe, said the chief drawback in using larger doses of spinal fluid was explained by Hauptmann himself. Those who were acquainted with antigen standardization tests would remember the early hemolysis in the control tube containing nothing but the hemolytic system. This took place earliest because in this combination there was nothing to interfere with the perfect working of the system. As soon as these ideal conditions for hemolysis were interfered with, hemolysis was delayed and partial or complete inhibition was favored. We saw this in the tube containing absolutely non-luetic serum, plus the hemolytic system, and in the same combination with the inhibitory extract. In other words, there were many factors besides syphilitic serum or fluid that were capable of delaying hemolysis. It had been long ago established that there were diseases besides syphilis capable of giving rise to full-fledged Wassermann reactions. These were leprosy, trypanosomiasis, malaria, scarlet fever and sometimes measles. The speaker said he had often found it present in scleroderma. Besides these, he had the opportunity to establish in 1909 the additions of ox-gall to sera, and he had found that a non-specific inhibition with the bile sera was very marked. This experiment suggested itself after a positive Wassermann was obtained on jaundiced sera, secured from patients who gave no history nor evidence of lues. This was a very important addition to the causes of non-specific

inhibition. Lately, Craig, in Washington, observed that patients whose serum was negative on one occasion would become positive sometimes a day or two later, after a fresh venipuncture. An analysis of the situation showed that this was due in every instance to the generous inhibition of alcohol. Experiments, with this in view, proved that the free use of alcohol was capable of turning a negative Wassermann into a positive one at short notice. Dr. Kaplan said he held that this was partly due to the effect alcohol might have on the liver.

The above showed that the chances of reporting undesirable Wassermanns were quite numerous and insurmountable. Besides these organic non-specific inhibitory influences, there were a number of factors in the reagents used that contributed considerably to the chances of reporting positive after a negative result. There were the weakening of the amboceptor, the changes in the antigenic molecule, weak complement, and the resistance of some sheep corpuscles to hemolysis.

SPINAL DECOMPRESSION, WITH THE REPORT OF SEVEN CASES AND REMARKS UPON THE DANGERS OF AND THE JUSTIFICATION FOR EXPLORATORY OPERATIONS

By Pearce Bailey, M.D. and Charles A. Elsberg, M.D.

In this paper, the authors called attention to the relief of symptoms which followed the removal of the spines and laminæ and the incision of the dura in seven cases of spinal disease. The improvement in most of these cases was very striking, although in two the changes in the symptoms which followed the operation could not be construed as benefits to the patient. In one case, severe pain of three years' duration was promptly relieved: in another, there was almost complete recovery from the symptoms of a lesion at the level of the eighth dorsal segment, an atypical Brown-Séquard syndrome, with unilateral sensory loss and spastic motor palsy of both lower limbs: in a third, there was a disappearance of unilateral sensory symptoms and spastic motor paralysis of one leg. In one patient, only temporary changes in the symptoms occurred; these were of physiological interest, but without practical benefit to the patient. In a case of infiltrating tumor of the cauda equina, the pain disappeared and the anesthesia grew less: in a case of intramedullary tumor, the patient, bedridden before the operation, regained the power of walking without assistance; in still another, the anesthesia improved.

After a detailed report of these seven cases, the authors offered the following conclusions:

1. The free removal of spinous processes and laminæ, with opening of the dura, may have a profound effect upon the spinal cord in certain pathological conditions.

2. There are a number of intradural conditions which present symptoms which are as yet indistinguishable from those of spinal tumor.

3. Even in the absence of increased intradural pressure or a discoverable lesion, the operation of laminectomy and incision of the dura may be of great benefit.

4. For the reasons above stated, and on account of its relative safety in experienced hands, exploratory operations upon the spine should be done more often.

Dr. Foster Kennedy stated he had had the opportunity of seeing Dr. Elsberg operate, and could strongly indorse what he said about the freedom from risk attending an ordinary laminectomy in a patient in good condition.

The speaker said that while in London he saw a number of operations for supposed spinal tumor, and in spite of the fact that no gross lesion was found, the beneficial effects of these operations were often remarkable. In some of these cases, for want of a better name, the condition was somewhat loosely spoken of as a pachymeningitis.

Dr. Kennedy said the benefit derived from the decompression operation was perhaps due to changes induced in the local circulation.

Dr. J. Ramsay Hunt said that in considering the advisability of an operation for a spinal cord condition, one should not lose sight of the possibility of an unfavorable result after laminectomy. He recalled three cases of tumor of the spinal cord in which the diagnosis rested between an intra- and an extra-medullary growth, and in which operation was not followed by improvement; on the contrary, in two of them there were very definite signs indicating an increase of growth following the operation. While those cases in which an exploratory operation on the spine was followed by distinct improvement in the symptoms were very interesting, we should not lose sight of the fact that in some instances the traumatism incident to an exposure of the cord would accelerate the pathological condition, and the indication should not be made too general.

Dr. I. Strauss said he had seen Dr. Elsberg do a number of laminectomies and he had seen other surgeons do the operation, and he did not think the view should go forth that laminectomy was a simple operation without any risk to the patient, especially in the hands of a surgeon inexperienced in this field. He recalled one case, which resulted fatally, in which, in his opinion, the cord was handled to an entirely unjustifiable extent, which was perhaps the determining factor in the fatal issue in some of these cases, rather than the laminectomy itself.

Dr. Strauss said that one of the cases reported by Dr. Elsberg was originally believed to be one of spondylitis deformans. In one such case which was under the care of Dr. B. Sachs, the patient was turned over to an orthopedist, and as the result of the application of a proper apparatus he was now able to go about without pain and was very comfortable.

The speaker said he did not think it was necessary to incise the dura in these cases. He recalled one case of chronic infection of the bone in which remarkable improvement followed a laminectomy, without incision of the dura. In one case of staphylococcus infection of the spine with a coincident infection of the femur, an operation was considered, but the idea was abandoned because the patient recovered under orthopedic treatment—spinal fixation by means of a brace. Had this case been operated upon and the dura incised there would have been great risk of meningeal infection.

Speaking of laminectomy for spinal syphilis, Dr. Strauss said that in a case of meningo-myelitis of specific origin which failed to improve under the use of mercury, laminectomy might have been of some avail.

Dr. Leszynsky said there was one point Dr. Elsberg had omitted to mention in his paper, and that was, the rapidity with which he did this operation. In one case, he had seen Dr. Elsberg remove five laminæ and spines, and expose the dura, in less than fourteen minutes.

Dr. I. Abrahamson said that in a case of localized serous meningitis

that was operated on by Sir Victor Horsley, the cord began to pulsate immediately after the operation and the patient was assured that he would probably get well. No improvement, however, followed.

Dr. Pearce Bailey said that in connection with these cases the question naturally arose, what would become of these patients if they had not been operated on? That question he could not answer as most of these cases presented a complete picture of spinal cord tumor, with definitely localized symptoms, and there was little choice in the matter but to operate.

The feature that astonished him most, Dr. Bailey said, was the frequency with which these conditions occurred. Horsley operated on over twenty cases without a single death, and in that number he failed to find a single spinal cord tumor. Personally, the speaker said, in view of these pseudo-tumor cases, he had become very chary of guaranteeing the presence of a tumor, although he expected to see the operation followed by beneficial results.

Dr. Elsberg said the case referred to by Dr. Strauss did not show a true spondylitis deformans. As to the necessity of opening the dura, the speaker said it was beyond his comprehension that any one could judge of intra-dural conditions by the external appearance of the dura. The only thorough method was to widely open the dura, so that a complete inspection of the cord could be made. The posterior body of the vertebræ should also be examined.

Dr. Elsberg said that while one should not try to do a laminectomy by the clock, it was doubtless true that the quicker the operation was done, the less the consequent shock and loss of blood. The purely mechanical part of the operation must be done as rapidly as possible.

Dr. Bailey said Horsley had expressed the view that probably many cases of so-called myelitis were really meningeal in origin, and that an operation might arrest the whole process.

The following officers were elected for the ensuing year: President, Dr. L. Pierce Clark; first vice-president, Dr. Smith Ely Jelliffe; second vice-president, Dr. E. W. Scripture; corresponding secretary, Dr. J. Ramsay Hunt; recording secretary and treasurer, Dr. Edwin G. Zabriskie.

THE PHILADELPHIA NEUROLOGICAL SOCIETY

December 22d, 1911

The President, Dr. Alfred Reginald Allen, in the Chair

A CASE PRESENTING LOSS OF PAIN AND TEMPERATURE SENSES ON THE ENTIRE RIGHT SIDE, PARESIS OF THE LEFT FACE AND RIGHT ARM AND LEG, ATAXIA AND INCREASED REFLEXES; SYPHILIS OF THE PONS

By George E. Price, M.D.

The patient (from the Neurological Department of the Jefferson Hospital) was 38 years old; an American; occupation, cook.

Family history was negative.

Previous History.—He had "black fever" in Cuba during the Spanish-American War; gonorrhea at the age of 16, and chancre when 25 years old. He at times used alcohol to excess. Since he was 8 years of age he

has had a discharge from the left ear following a blow over the left mastoid. For this condition, three mastoid operations had been performed, the last on October 3, 1911, by Dr. Klopp at the Jefferson Hospital. Four days after this operation, the patient had a brief loss of consciousness following a complaint of headache and dizziness. Two days later he had a convulsion accompanied by loss of consciousness. Shortly after this he had a convulsion, tonic in character, with retraction of the head. The patient stated that the spasm started in the right arm and leg. The convulsions continued at intervals for several days. On November 4, he had an attack of vertigo, fell to the floor, was conscious and had no convulsion. On November 16, there were two attacks of vertigo followed by weakness of the right arm and leg.

Examination December 1 revealed a normal gait with the eyes open, slight ataxia with the eyes closed. Rhomberg's sign was present. The pupils were unequal, the left being the smaller; both reacted to light and accommodation. Upon looking toward the left he stated that he saw double, but there was no apparent weakness of the ocular muscles. Nystagmus was not present. He was unable to retract the angle of the mouth toward the left as well as toward the right. The tongue was protruded in the median line. There was partial loss of power in the right arm and leg. Ataxia of both upper extremities was present, slight on the left, more marked on the right. All reflexes were exaggerated, slightly on the left side and markedly on the right side. There was no ankle clonus nor Babinski's sign. Tactile sensation was preserved over the entire body although not as acute on the right side as on the left. Pain and temperature senses were lost over the entire right side, as were also muscle sense and sense of position. There was no astereognosis.

Dr. LeFever reported unequal pupils and a paresis of the left inferior oblique muscle (not confirmed upon a subsequent examination). There were no fundus changes.

Dr. S. MacCuen Smith reported absence of hearing in the left ear, centric in origin.

A Wassermann test was positive.

Dr. Price believed that all the symptoms with the exception of the transient external ophthalmoplegia could be explained by a lesion in the left side of the pons at the level of the auditory nerve.

Dr. Charles K. Mills presented a preliminary report on a case of ataxia of the left upper extremity with paralysis of emotional expression on the right and loss of the senses of pain, heat and cold on the entire right side.

Dr. Spiller referred to a case of his in which there was loss of emotional movements with preservation of voluntary movements from a tumor of the cerebello-pontile angle.

Dr. Cadwalader stated that Dr. Mills and Dr. Spiller having both referred to peripheral nerve lesions as possible causes of paralysis of emotional movements of the face, he (Dr. Cadwalader) wished to record a case which he had been watching for some months in which there was an isolated paralysis of one peripheral fifth nerve including both the sensory and motor branches. Anesthesia was profound for all forms of sensation throughout the entire distribution, in all other respects physical examination was negative except for a positive Wassermann reaction. The muscles innervated by the seventh nerves acted promptly and equally on both sides with all voluntary movements, but when smiling or laughing

there was a distinct inequality, the anesthetic side of the face did not contract as well as the normal side. It was not a complete emotional paralysis but a definite impairment or paresis of emotional movements similar to Dr. Mills' case in character, but different in that the degree of impairment was very slight.

Dr. Dercum regarded Dr. Mills' case as unique. He felt that it was very difficult to give an explanation with regard to the absence of emotional expression upon one side of the face. The motion pictures of Dr. Weisenburg suggested to his mind that this one-sided loss of emotional play was really an act of inhibition, and was the exact reverse of that which we sometimes find as a result of nervous overflow in patients with ordinary Bell's palsy, who are unable to move the paralyzed side, and yet when they laugh spontaneously, laugh on both sides.

Dr. T. H. Weisenburg said that the patient that Dr. Mills reported he had known a long time. He was in Dr. Weisenburg's service at the Philadelphia Hospital and he was fortunate enough to obtain moving pictures of him a few months before his death. At that time the patient was getting rather weak, and it was necessary to bring him before the camera in a rolling chair. It was noticeable that when the man started to laugh he laughed quickly and only on one side of his face.

A CASE OF ABORTIVE DYSTROPHY

By Dr. J. W. McConnell

This man is 29 years of age, he was admitted to Blockley about six weeks ago and gave the following history: He was perfectly well until four years old, when he fell from a third-story window, was taken to the Presbyterian Hospital and remained for some time. He knows nothing about his subsequent history to the time of going to school at seven years. At that time they told him he walked peculiarly. The peculiar gait he then had is still present, and he also presents an atrophy of both thighs and both buttocks without any losses of sensation, without any fibrillary tremors and with diminished reflexes and perfectly normal electrical reaction. The fact that the atrophy has not increased, the fact that the bones have grown to proper length, and the absence of sensory changes made it look to Dr. McConnell like a case of abortive dystrophy. Dr. McConnell said that he made this diagnosis with some hesitation. The suggestion of traumatism involving the anterior horn cells was made at first, but further examination does not prove that such diagnosis is tenable. There is no atrophy in any other portions of the body, excepting the thighs and buttocks. The legs are not atrophied. The man says that so far as he knows he was perfectly normal up to the age of four years. His manner of rising is certainly suggestive of dystrophy. He has the typical waddling gait of dystrophy. He raises almost perfectly well on his toes. He has a normal Achilles reflex, no Babinski sign or ankle clonus. The knee jerks are diminished almost to the point of abolition.

Dr. W. G. Spiller said that he was not convinced that the case was one of muscular dystrophy. A number of years ago Minor called attention to the fact that in injury to the spinal cord or vertebræ with weakness of the lumbar muscles this climbing up on the lower limbs occurs. It seemed possible that this man had an injury of his spinal column in the upper lumbar region, and this atrophy of the thighs had existed since early childhood without any involvement of the muscles of the shoulder.

Dr. G. E. Price said that in his opinion the absence of fibrillation and the reactions of degeneration would seem to suggest that the condition was not the result of a cord lesion.

Dr. McConnell said if there were injury to the cord we ought to have some of the muscles below the knee involved. It would seem that the man has very little involvement of the muscles below the knee and the electrical reactions are very prompt and quite full in their expression, and it seemed to him that we had to deal not with a lesion of the spinal cord, but muscular dystrophy. There were no sensory changes whatever. The muscles responded very well in proportion to the amount of muscle still there.

MOVING PICTURE ILLUSTRATIONS OF NERVOUS DISEASES

By T. H. Weisenburg, M.D.

The present series of moving pictures shown by Dr. Weisenburg consisted of three cases of athetosis occurring in infantile diplegias, three cases of paralysis agitans, one case of multiple sclerosis, a case of unilateral laughing reported by Dr. Mills, and a case of locomotor ataxia with optic atrophy and complete loss of vision in which closing the eyelids made the patient stagger. Dr. Weisenburg had already shown another series of moving pictures before the College of Physicians and other societies.

This is probably the first time in the history of medicine that moving picture illustrations of a patient were shown at the same time that a necropsy report was made of the case. It is only fitting that it should have been of such an important case as that of Dr. Mills of unilateral laughing which established a new symptom-complex.

Dr. Alfred Reginald Allen said that he had seen the pictures which Dr. Weisenburg had at the College about a year ago and he thought they were very good then, but now he thought Dr. Weisenburg had surpassed himself. What Dr. Weisenburg had shown made one realize that this is a method of making record of a case which we cannot afford to ignore. The very fact that Dr. Mills made the presentation that he had made—a most important thing—and that Dr. Weisenburg had shown this man, now buried, on the sheet is startling.

Dr. Augustus A. Eshner said that while this demonstration was going on it occurred to him that the question might properly be raised whether there is a difference between spontaneous laughter and that induced by request. It may be found that the one is a normal and unconscious physiological reflex, while the other partakes more of the nature of a volitional act.

Dr. Mills said he should say that the very asking of a man or a woman to laugh always strikes them as funny.

Dr. Weisenburg stated that it was difficult to make patients laugh spontaneously before a moving picture camera but that the patient referred to had been so well trained that he could laugh almost instantly.

Dr. Charles K. Mills reported thumb clonus in a case of hemiplegia and hemianesthesia.

A CASE OF ADIPOSIS DOLOROSA WITH JOINT CHANGES

By F. X. Dercum, M.D.

Among unusual complications noted in adiposis dolorosa are changes in the joints. Attention was first directed to this by Renon and Heitz

who in 1901 presented a case of "adiposis dolorosa with multiple arthropathies," before the Neurological Society of Paris. In addition to the usual symptoms of the affection there were present marked pain, and creaking and limitation of movement in numerous joints. A skiagraph of the left knee failed to reveal any alteration of the articular surface. The knee-cap, however, was a little thickened, and its structure offered a somewhat mottled appearance. The synovial membranes gave rise to a slightly opaque shadow which was especially evident at the cul-de-sac under the quadriceps tendon. This shadow, Infroit, who made the skiagraph, regarded as due to fatty thickening of the synovial membrane. In 1902 the writer placed on record (*Phila. Med. Jour.*, Dec. 20) a second case of adiposis dolorosa with involvement of the joints. Skiagraphs revealed no changes whatever in the bones but some thickening of the tissues about the joints, especially about the knee joints. The conclusion was justified by the examination of the joints that there was present a marked thickening of the synovial membranes and possibly of other structures in the neighborhood of the joints. There was a marked tendency to the formation of fringes and rice bodies. The joints appeared as the patient expressed it to be "loose," and motion was attended by considerable pain. That the changes observed were due in part at least to fatty infiltration and that this fat was painful, just as was the fat in the tumor masses on the surface of the body, afforded the most reasonable explanation of the condition. It was possible also that an actual synovitis was present. Rheumatism could not offer an adequate explanation of the conditions found, while rheumatoid arthritis is excluded by the absence of changes in the bones and cartilages. More recently Price has made studies in the joints of two other cases confirming these findings.

A most interesting case of adiposis dolorosa in which bony changes were noted in the dorsal vertebræ and in the ribs has been placed on record by Price and Hudson (JOUR NERV. AND MENT. DIS., April 19, 1909). Kyphoses with corresponding deformity and reduction in size of the vertebræ was noted in the dorsal region and confirmed by the skiagraph. Similar changes were noted in the ribs. The authors call attention to the possible significance of these findings when the frequency of pituitary changes in adiposis dolorosa is borne in mind.

The following case from the nervous wards of the Philadelphia Hospital presents involvement more especially of the knee joints.

Her history is briefly as follows: B. McG.; white, female, born in Ireland; age 57; widow; mother of two children, both dead.

The family history is negative.

Patient did housecleaning, washing and cooking; always worked very hard. Drank coffee excessively; beer occasionally.

Previous Medical History.—Does not know whether she had the usual diseases of childhood or not. She had smallpox when young. Claims she has not been ill during the past twenty years except for occasional attacks of rheumatism. Began to menstruate at the age of thirteen. Menses regular, painless and normal in amount. *Ceased menstruating suddenly at the age of 35.*

Present Illness.—About twenty years ago patient was suffering from pains in both knees followed soon afterward by swelling about the joints. The swellings gradually became larger, were egg-shaped and always painful. The pain, however, is worse at certain times than at others. Some time after this she noticed swelling on both hips, which increased slowly

in size. After suffering in this way for about nine years, she came to the Philadelphia Hospital. While there she was operated on three times; first the adipose mass on the right hip was removed, then that on the left hip and finally the masses on the knees. She remained in the hospital about seven months. When she left the hospital, her knee and hip joints were normal in size but she had to use a cane to walk. She was able to get about fairly well until between two and three years ago when she was again troubled with pains in the knees and hips, followed by swellings. Returned to the Philadelphia Hospital in August, 1910. Soon after her admission, her legs assumed a flexed position, to relieve which she was operated on in July, 1911, the operation consisting of a mere straightening of the legs. The pains persisted and the fatty tumors along the legs increased in size. Since this time her legs have become flexed again.

Physical Examination.—Gait and station cannot be determined as patient can neither walk nor stand.

Mental Functions: Her memory seems fair. Attention is easily obtained though somewhat difficult to hold to one subject for any length of time. Is oriented. No hallucinations nor delusions. No insomnia.

Patient is defective in hearing in both ears; is unable to hear a watch tick an inch from either ear. Speech normal. No loss of sense of smell. No abnormal movements. Visual fields apparently normal. No hemianopsia; no ptosis; no diplopia; no nystagmus. Palpebral fissure equal and normal in width. Pupils are equal, round and regular and react to light and accommodation. Movements of jaw normal. Face muscles normal. Tongue protruded in median line, no tremor, no disturbance of taste. Molars missing in both jaws; palate is normally arched.

Upper Extremities: Grip of both hands weaker than normal; left hand the stronger. Both elbow joints show marked enlargement which is painless, with marked limitation of motion. This swelling is of cartilaginous or bony hardness and there is a projection posteriorly from right elbow like a large exostosis. At posterior aspect of both arms are pendulous masses of fat with a characteristic "bunch of worms" feel. These masses are painless.

Face, shoulders and upper part of trunk are unaffected.

Apron-like folds of adipose tissue are present in the lower abdomen and while they have the characteristic feel are not painful.

Lower Extremities: Enormous masses of adipose tissue overhang both hips and are quite painful on pressure, besides giving rise to spontaneous pain. The lower extremities are extended at hips and flexed at knees with large lobulated masses of fat at posterior surface of thighs and hanging from both calves. The knees are enlarged; the swelling, however, not being as hard as that of elbows. Numerous small bodies can be distinctly felt around both knee joints. These bodies are firm but not hard; semi-elastic in consistency and are readily movable under fingers. The knees resemble the Charcot joint of tabes. Adipose masses are behind both ankles. Feet unaffected. Small joints of hands and feet show no changes. Babinski absent. Knee jerks unobtainable.

Visceral Examination.—Lungs resonant throughout. Fine crepitant rales are heard along lateral aspect of both bases of lungs. Breath sounds rather harsh over anterior aspect of right lung.

Heart, all sounds indistinct. No distinct murmurs. Some arrhythmia exists.

Abdomen shows nothing abnormal.

Röntgen Ray Report (Dr. Manges, October 20th, 1911).—Both knees and elbows show advanced osteoarthritis of mixed type.

Eye Report.—Negative except for slight inequality of the pupils.

Contrary to the cases previously published, changes as revealed by the Röntgen ray appear to be present in the bones, cartilages and synovia. This has probably been a relatively late development. There is quite evident thickening in the tissues about the joints, especially about the knee joints, and it is probable that there is a fatty infiltration or adiposis of these tissues, for like the fatty deposits elsewhere, the swellings are painful to pressure.

It is an important fact to bear in mind as having special significance that the patient passed through her menopause very early, *i. e.*, she ceased menstruating at thirty-five. It is very probable therefore that as in the other cases of adiposis dolorosa, there is here disease of the pituitary body, that there is a distinct hypo-pituitarism of the glandular portion of the structure and in keeping with this an early diminution of sexual function and cessation of menstruation.

Dr. William G. Spiller asked Dr. Dercum to explain the difference between the case he had presented and von Recklinghausen's disease. Dr. Spiller said he did not dispute Dr. Dercum's diagnosis, but would like to hear his differentiation.

Dr. Dercum said that he regarded the case as one of adiposis dolorosa because of the large and diffuse swellings over the buttocks and thighs and because of the pain present in these masses both spontaneously and upon pressure. The small nodules noted in forearm of the patient presented by him are soft, are freely movable in all directions and are not in any way connected with nerve trunks and there is nothing but a superficial resemblance therefore presented to von Rechlinghausen's disease. The fact further that this patient presented the history of an early cessation of menstruation, just as do so many other cases of adiposis dolorosa, is in keeping with the diagnosis.

Dr. H. Maxwell Langdon read a report of a case of acute encephalitis superior of Wernicke.

Dr. Charles K. Mills said the case was interesting to him because of other cases of encephalitis in the same region or in a nearby region of the brain such as have occurred during the epidemic of poliomyelitis, or since the epidemic from time to time. He did not remember whether there was indication in the history of anything like a poliomyelitic infection. The case was interesting from the amount of recovery which took place. He said he could not see any other diagnosis than that of polioencephalitis superior.

Dr. W. G. Spiller said that Dr. Langdon's case was extremely interesting not only from the fact that the patient completely recovered. Extremely important in the diagnosis were complete paralysis of associated movement of the eye-balls and the headache, nausea and vomiting, but there was one symptom in the case which was not satisfactorily explained, viz., the extreme tenderness of the soles of the feet when the man was standing.

Dr. Langdon said the interesting point from his own standpoint was the complete loss of vision with so complete a recovery, the recovery taking place in such a short space of time. In five days after Dr. Langdon first saw the patient he was completely blind, and did not have even light perception for a while in either eye. That condition lasted only a few

hours. There was never more than slight hyperemia with a little veiling of the disk. Dr. Mills spoke of complete recovery; several of these cases recovered. Dr. Langdon said he believed the sweats and free purgation had a great deal to do in bringing about recovery. The symptoms followed five or six weeks an attack of influenza, which the medical attendants believed to be the etiological factor. Barring alcohol, there have been more cases after influenza than any other cause. Dr. Langdon said he believed it was due to the toxines of the influenza.

Translations

DREAMS AND MYTHS. A STUDY IN RACE PSYCHOLOGY*

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I

Object and Viewpoint of Psychoanalytic Investigations According to Freud

The psychological theories that are associated with the name of S. Freud reach out into regions of the psychic life of man, which, from outer appearances, have no relation to one another. Freud in common with J. Breuer in their "Studien über Hysterie" (1895) started out from pathological psychic manifestations. The progressive elaboration of the psychoanalytic method required a searching study of dreams.[1] It appeared also that for a full understanding of these phenomena the comparative consideration of certain other phenomena must be taken up. Freud saw this and drew wider and wider areas of the normal and diseased psychic life into the field of his investigations. So there appeared in the *Sammlung kleiner Schriften zur Neurosenlehre* (1906) an assortment of studies of hysteria, compulsive ideas, and other psychic disturbances, later the monographs "Über den Witz" (1905), the "Abhandlungen zur Sexualtheorie" (1905), and lately the psychological analysis of a poet's works,[2] which constitutes the first volume of this series. Freud came to consider these apparently heterogeneous products of man's psyche from a com-

* Traum und Mythus. Eine Studie zur Völkerpsychologie. Schriften zur angewandten Seelenkunde. Leipzig und Wien. Franz Deuticke 1909.

[1] "Die Traumdeutung." Wien und Leipzig, 1900 (2 Aufl. 1909).

[2] "Der Wahn und die Träume in W. Jensens' 'Gradiva.'" Wien und Leipzig, 1907.

mon viewpoint. They all have in common the relation to the unconscious, to the psychic life of childhood, and to the sexuality; they have in common the tendency to represent a wish of the individual as fulfilled; in common are the means of this representation, which serve to this end.

He who is not acquainted with Freud's writings and those of his followers, will be astonished that one should earnestly seek to place all these expressions near one another under the same viewpoint. He will ask what sort of relations wit has to the unconscious. He will doubt that a disease can contain a wish-fulfillment for the patient who suffers from it and he will not quite comprehend how one can place poetry parallel in this respect. He will not understand what general relations are supposed to prevail between the dreams of adults and the psyche of the child. He will, and this perhaps most, be opposed to the idea that one can ascribe to all these psychological phenomena relations to sexuality. And so the teachings laid down by Freud appear to be full of contradictions and absurdities; they appear as isolated statements without critique to generalize. Consequently one will be inclined to reject, *a limine*, the methods of investigation, with the help of which, results like these are obtained.[3]

If I were to attempt here an answer to the different objections I could not avoid a detailed presentation of all of Freud's teachings and would be obliged to considerably overstep the limits of this work. Opportunity will offer, in the course of our inquiry, to touch upon the most important problems to which Freud has devoted his work. In the meantime suffice a reference: All of the psychic phenomena which we above place side by side are the products of phantasy. We will not assume, without further demonstration, that as such they present certain analogies among themselves.

There are, besides the products of individual phantasy, also those that cannot be ascribed to such phantasy. I am satisfied at this place to mention myths and legends as structures of such a kind. We do not know who created them, who first related them. In the sagas and legends folk phantasy finds expression.

[3] This is about the standpoint taken by the medical profession to Freud's teachings. It must be confessed that Freud's teachings must at first appear strange to the unprejudiced. It should be emphasized that a wide cleft separates them from traditional psychology. That should be no ground, however, for dismissing them with a shrug of the shoulders or a few witty catch words, as happens on the side of the critics.

Freud has already made them, to a certain degree, the objects of his inquiries, and in numerous respects disclosed psychological analogies between them and the results of individual phantasy. Recently another author has followed in his tracks. Riklin[4] has examined into the psychological analogies of the legends of different peoples. The proposed work is an attempt to compare myths with the phenomena of individual psychology, especially with dreams. It will bring out the proof that Freud's teachings, in a wide sense, can be transferred to the psychology of myths, and are even qualified to furnish wholly new grounds for the understanding of the sagas.[5]

II

Childhood Phantasies in Dreams and Myths. Application of the Wish Theory to Myths

I will anticipate at once some of the principal evident objections to this undertaking as planned. It will be objected that myths spring from phantasies which operate during the waking state, while dreams owe their origin to sleep and to a condition of lowered consciousness. Careful consideration shows, however, that this in no way constitutes an important difference. We dream not only during sleep; there are also waking dreams. In these we transfer ourselves into an artificial situation and form the world and our future according to our wishes. That the same tendency dwells in night dreams will very soon be accepted by us. Many people tend, in a surprising degree, to day dreaming: one sees them thus absorbed. Imperceptible gradations lead over here to a pathological activity of phantasy. Children give themselves to such dream-like phantasies very readily. The little boy, in his day dream, is king of a great realm and conquers in bloody battles; or he distinguishes himself as an Indian chief or in some other manner. Pathological grades of absorption in day dreams are not rare among children. We already see from this

[4] The announced work of Riklin: "Wunscherfüllung und Symbolik im Märchen" (Vol. 2 of this series) appeared after my work was finished. I could, therefore, only make use of a short preliminary communication of the author. (*Psychiatr.-neurol. Wochenschrift*, 1907, Nr. 22–24.)

[5] Likewise after the conclusion of this projected work an article of Freud appeared ("Der Dichter und das Phantasieren," *Neue Revue*, 2. Märzheft, 1908), which expressed in brief, the fundamental idea of my work. ("Es ist von den Mythen durchaus wahrscheinlich, dass sie den entstellten Überresten von Wunschphantasien ganzer Nationen, den Säkularträumen der jungen Menscheit entsprechen.")

that there is no sharp dividing line between waking phantasies and dreams. We know further, however, from Freud's researches, that the dream thoughts do not arise during the dream but are representations from previous waking periods. In the dream they only maintain a form, which differs from that in which we commonly care to express our thoughts.

Another objection, which likewise only has an apparent validity, concerns itself with the fashioning of the point of departure for our further consideration. It will be shown that the dream is an individual product, while in myths there is stored, in a way, the collective spirit of a people. One finds the comparison invalid. This error is easy to refute. If dreams originate from the emotions of individuals so there are emotions which are common to mankind. These express themselves in what Freud calls "typical" dreams. Freud has succeeded in tracing back this group of dreams to certain wishes common to all men, at the same time to point out that these same wishes lie at the bottom of certain myths. Freud's deductions regarding typical dreams may thus serve as a basis for our researches. Still it commends itself to us for our purposes, to take up the analysis of the typical dreams as a starting point. They give us opportunity to investigate the wish theory of dreams. Besides they offer, as will be shown, in certain respects, simpler situations than most other dreams.[6]

According to the theory of Freud there lies, at the bottom of every dream, a repressed wish in the unconscious. Every one experiences occurrences which he afterwards can never recall without a lively feeling of pain. He seeks to force such reminiscences out of his consciousness. He is not able fully to extinguish them from memory; he can only repress them into the unconscious. The repressed memories and the wishes associated with them are only apparently forgotten; that is to say they are withdrawn from spontaneous recall. So soon, however, as the function of consciousness is in any way impaired, when phantasy takes the place of logically ordered thought, as is the case in day dreaming, the dream, and under the most varied pathological sit-

[6] A further, apparently very substantial objection against the conceived relationship of dreams and myths arises from the gradual rise of myths through many generations, while the dream appears to be a transitory, short-lived structure. This objection will find its refutation in the course of our investigations.

uations, then the repressed psychic material becomes again free. In dreams, and in the symptoms of certain psychic disturbances, the repressed wishes come again to expression. Their formerly hoped for, but delayed fulfilling is represented now in phantasy. That an important part of the repressed wishes spring from the period of childhood is one of the facts established by Freud and to which we must later come back. For the present it is sufficient to keep in mind that according to Freud's view the dream represents the fulfillment of a repressed wish and that the deepest roots of this wish lie in the childhood of the dreamer.

Freud especially emphasizes that the typical dream is descended from infantile reminiscences. Especially instructive, in this respect, are those dreams which deal with the death of near relatives. These dreams at first glance appear absolutely to contradict his view that every dream contains a wish fulfillment. Probably every one who has at some time dreamt of the death of a near relative whom he loved, will energetically assume the defensive if one assumes that he wished the death of his relative and that this secret wish came to expression in the dream. He will also emphasize that the dream was accompanied by the most painful feelings of anxiety and fright and so perhaps brought to expression an apprehension but certainly not a wish.

The theory in no way refers only to actual wishes but lays stress with great emphasis upon the significance of early infantile emotions. If one dreams of the death of a dear relative it is not at all necessary, according to Freud's teachings, to draw the conclusion that the dreamer now has such a wish; he needs only to have had it at some, perhaps remote time. To be sure one will not easily acknowledge this either.

The child, up to a certain age that shows considerable variations, is free from altruistic feelings. He lives in a naïve egoism. It is throughout erroneous to assume that the feeling of the child for its parents and brothers and sisters is from the beginning a feeling of affection. On the contrary there exists instead among the children a certain rivalry. When a second child is born the first, who had been an only child up to that time, clearly shows jealousy on account of the attention paid to it because of its helplessness. It is quite usual that a child will not give the bottle of milk to the younger, that its jealousy is stirred up when it sees the newcomer sitting on its mother's lap, which was formerly only

its own place. It envies it its playthings, it emphasizes its own superiority when it speaks of the younger one to adults. The younger child reacts, as soon as it is in a position to, in just such an egoistic manner. It sees in the elder an oppressor and seeks to help itself as well as its weakness makes possible. Under normal conditions these contrasts gradually disappear to a great extent. They are never wholly rooted out in spite of all educational measures.

This hostile attitude of one child toward the other finds its expression in the wish that the other were dead. Naturally it will be disputed that a child can be so "bad" as to wish the other dead. "Who says that does not consider that the idea of the child of 'death' has little in common with ours except the word" (Freud). The child has no clear idea of the death of a person. It hears perhaps that this or that relative has died, is dead. For the child that only means: that person is no longer there. Daily experience teaches us how easily the child gets over the absence of a loved person. It perhaps stretches the hand forth in the direction in which the mother has gone, it cries a little while—then consoles itself with games or food and no longer recalls spontaneously the going away. Older children of normal psychic constitution also get over a separation easily. In early years the child identifies death with absence. It cannot represent to itself that anyone, of whose death it has been told, will never again return. We understand now how a child in all harmlessness wishes the death of the other (or any other person). It is its rivalry: were it not so, then the occasion for rivalry and jealousy would be removed.

Between brothers and sisters this relationship of rivalry is milder than between children of the same sex, moderated by the sexual attraction. We will have to consider this point later.

New opposition arises when we consider the relation of the child to the parents from the above viewpoint. How can one assume that the child wishes the death of the father or the mother? One will at most grant this in such cases as the abuse of the child by the parents, but will add that these are fortunately exceptional cases to whom the generalization is not applicable.

The dream of the death of the father or mother, as it occurs to everyone, contains the sought-for explanation. Freud shows from it that "the dream of the death of parents is preponderat-

ingly common concerning that one of the pair of the same sex as the dreamer, so the son, for the most part dreams of the death of the father, the daughter of the death of the mother." This behavior is explained in part as due to an early sexual preference of the son for the mother, the daughter for the father. Out of this preference grows a certain rivalry of the son with the father for the love of the mother, and a similar situation between daughter and mother for the love of the father. The son rebels earlier or later against the patria potestas, in some cases openly, in others inwardly. At the same time the father protects his dominance against the growing son. A similar relation occurs between mother and daughter. As much as culture may soften or change this rivalry, through piety towards the parents, through love of the children, still its traces cannot be extinguished. In the most favorable cases these tendencies become repressed in the unconscious. Straightway they express themselves in dreams. Children, who are disposed to nervous or psychic disease, show, already in the early years, a very strong love or a very strong repulsion towards the parents or towards one of them. In their dreams they show these tendencies especially clearly, not less clearly, however, in the symptoms of their later disease. Freud gives very instructive examples of this kind.[7] He cites, among others, the case of a mentally ill girl who for the first time, in a period of confusion, expressed violent aversion for her mother. As the patient became clearer she dreamt of the death of her mother. Finally she no longer contented herself with repressing in the unconscious her feelings against her mother, but proceeded to over-compensate for that feeling by constructing a phobia, that is a morbid fear, that something might happen to the mother. The aversion became transposed, the more the patient gained composure, into an excessive apprehension about her mother's goings and comings. I have myself lately observed a quite similar case.

As complementary it may be mentioned that the dreams of adults seldom turn on the death of a child. Pregnant women, who suffer from their condition, dream of an abortion. Fathers or mothers, who in the waking state tenderly love their child, dream under special conditions that it is dead, for example, when the existence of the child interferes with the attainment of an object.

[7] "Traumdeutung," Seite 179 f.

The typical dream then contains wishes which we in our waking life will not admit. In the dream life these secret wishes find expression. These wishes, common to many or to all mankind, we meet also in the myths. The first point of comparison to occupy us is, then, the common content of certain dreams and myths. We must follow Freud's lead still further. For, as mentioned, he has first analyzed a particular myth—the Œdipus saga —from the viewpoint set forth in his "Traumdeutung." I cite literally the following passage from Freud.[8]

"Œdipus, son of Laius, King of Thebes, and Jocasta, was, as a suckling, exposed, because an oracle had prophesied to the father, that the yet unborn son would be his murderer. He was saved and grew up as a king's son in a strange court, until he, uncertain of his origin, questioned the oracle himself and received from it the advice, to avoid his home, because he would be the murderer of his father and the mate of his mother. On the way from his supposed home he fell in with King Laius and slew him in a quickly stirred up dispute. Then he arrived before Thebes where he solved the riddle of the sphinx that blocked the way and as reward was chosen king by the Thebans and given Jocasta's hand in marriage. He reigned a long time in peace and honor and begot with his unknown mother two sons and two daughters, until a pestilence broke out, which caused the Thebans again to consult the oracle. Here is the material of the tragedy of Sophocles. The messengers brought the answer that the plague would cease when the murderer of Laius was driven from the land. The action of the story now consists only in the step by step gradual and skillfully delayed unfolding—like the work of a psychoanalysis—of the fact that Œdipus himself was the murderer of Laius and also the son of the murdered King and of Jocasta."

[8] "Traumdeutung," Seite 180 f.

(*To be continued*)

Periscope

Review of Neurology and Psychiatry

(Vol. IX, No. 8)

1. The Pathology of Two Cases of Tabetic Amyotrophy. S. A. Kinnier Wilson.
2. The Value of the Vibrating Sensation in the Diagnosis of Diseases of the Nervous System. R. T. Williamson.

1. *Two Cases of Tabetic Amyotrophy.*—Dr. Wilson inaugurates his appointment to the staff of the *Review of Neurology and Psychiatry,* as assistant editor, with a carefully written article on the minute pathology of two cases of muscular atrophy, beginning in the small muscles of the hands, and occurring in patients affected with locomotor ataxia The atrophy proceeded after the fashion of a progressive muscular atrophy The central nervous system, and nerves and muscles affected were studied. The pathological findings are summarized somewhat as follows: Case I. This was a man with a definite history of preceding syphilis and classical symptoms of tabes, with bilateral, more or less symmetrical atrophy of the Aran-Duchenne type. The lesions of tabes were typical. The affected muscles were found to present only interstitial changes, evidently of secondary origin. The peripheral nerves revealed changes chiefly of the nature of a chronic interstitial neuritis. The motor cells of the anterior horns were of grossly atrophic type where they had not vanished entirely. The affection of the anterior horn cells was noticeable throughout the whole cord, but its incidence was greatest where the centers for the wasted muscles are located, *i. e.*, in the lower part of the cervical enlargement. In the lumbo-sacral cord the cells were relatively better preserved and where this was the case it is noteworthy that more or less normal and atrophic cells may lie in the closest juxtaposition. Case II. This was a woman with classic symptoms of tabes and a previous history of a transient hemiplegia, five years preceding death, affecting the right side and speech, and with face drawn to the right. The hemiplegia was found on autopsy to have been due to a lesion in one pyramid, caused by degeneration of the basilar artery. The patient had wasting of the muscles of the right hand, forearm and arm. The right motor fifth was atrophic and very weak. After she became bedridden some general emaciation occurred. The anatomical changes found in this case were similar to those of the other case, but less advanced. In the spinal cord the characteristic appearances of tabes were obtained. The muscles supplied by the right motor fifth were completely atrophied, but the nerve showed relatively little regressive change; whereas the cells of the nucleus were either lost or degenerated. In addition, the clinical fact of the muscular wasting being more marked on the right side than on the left was associated with a correspondingly greater loss of anterior horn motor cells on the right side of the cord, in the cervical enlargement and first dorsal segment. In this case also the juxtaposition of normal and abnormal cells was noteworthy, and there was indication that there was a

general diminution of cells throughout the whole cord. The muscles and nerves did not present any indication of primary change; what was found was evidence of secondary change.

The article is accompanied by illustrations with special descriptive text. The writer's conclusions are as follows: Among the types of tabetic amyotrophy is one which, by its progressive nature and its functional distribution, is definitely of central origin, and analogous to the Aran-Duchenne type Though not common, it cannot be said to be a rarity. While no doubt some cases of this sort, especially some in which true tabetic symptoms are not prominent, are occasioned by a syphilitic meningo-myelitis, there are others, of which two are here reported, where the amyotrophy is the result of a chronic process affecting the anterior horn cells more or less directly, *i. e.*, the accompanying vascular, meningeal, or peripheral changes are not sufficient to have produced it. In such cases it seems justifiable to conclude that the syphilitic toxin has been the *causa causans,* more particularly since the lesions are widespread, diffuse, and irregular. It may be said, then, that the amyotrophy is an associated symptom of syphilitic, as opposed to parasyphilitic, origin, although it is probable that ere long the term "parasyphilis" will become meaningless.

2. *Vibrating Sensation in Nervous System.*—Bone sensibility, or pallesthesia, as the vibrating sensation has also been termed, was first especially described by Egger, in France, in 1899. It is always present in health, over the suitable test points, as obtained by the vibrating tuning fork. In making the test, in all cases, control precautions are very important. The fibers or paths conducting the vibrating sensation apparently do not decussate in the spinal cord. In many cases on record of unilateral lesion of the cord, the vibrating sensation has been lost on the side of the lesion below the level of the disease, whilst it has been normal on the opposite side. The vibrating feeling is probably not conducted upwards in the gray matter of the cord, as proven by autopsy, of destructive lesions of the gray matter with preservation of conduction on the same side. It is probably conducted upwards, according to Bing, in the posterior columns of the white matter of the cord. In combined postero-lateral sclerosis, the vibrating sensation is lost along with impairment of the muscular sense, at an early period of the disease, whilst other forms of sensation are normal at this period.

The vibrating sensation is present in acute anterior poliomyelitis of the infant and adult, in amyotrophic lateral sclerosis, primary lateral sclerosis, paralysis agitans, progressive muscular atrophy, idiopathic muscular atrophy, and neurasthenia. It may or may not be lost, when other forms of sensation are lost, in disease of the spinal cord or peripheral nerves. In peripheral neuritis from alcohol, diphtheria, influenza and other causes, the vibrating sensation is very often lost on the legs (malleoli and tibiæ) at a very early period of the disease. Often at this early stage no other form of anesthesia can be detected on objective examination. This loss, also, in these cases, shows that the disease is not limited to the motor parts of the nervous system. Its loss may be the only objective sensory defect in diabetic neuritis. Its loss in some cases of tabes dorsalis furnishes additional evidence of the disease. The vibration test is of value in suspected spinal tumor, in compression myelitis, in spinal syphilis, in early disseminated sclerosis, etc. In anesthesia due to brain disease the writer had not met with any cases in which the vibrating sensation was affected alone, or before other forms of sensation.

The writer's conclusions are that the vibrating sensation is a very delicate test for detecting slight affection of the sensory part of the nervous system. The vibrating sensation may be the first form of sensation affected. Its loss is of diagnostic value at the early stage of several affections, when the symptoms are slight and few; and in the differential diagnosis between several affections, the vibrating sensation is often of service. The latter includes also hysteria and malingering.

C. E. ATWOOD (New York).

Revue Neurologique

(Vol. 19, No. 13. July 15, 1911)

1. Alteration in Motion and Sensibility of Radicular Distribution in a Case of Softening of the Gray Matter of the Spinal Cord. MATTIROLO.
2. Traumatism to the Left Facial Nerve; Paralysis of the Frontalis Muscle with Normal Electrical Reactions. Paresis, Slight Contracture and Spasmodic Movements in the Other Muscles. BOUCHAUD.

1. *Alterations in Motion and Sensibility.*—The patient fell and fractured the spinal column in the region of the first thoracic vertebra. There was a flaccid paralysis of the legs and partial flaccid paralysis with reactions of degeneration in the upper extremities; and anesthesia to pain and temperature sense in the distribution of the first dorsal and seventh and eighth cervical nerve roots, with preservation of the tactile sensibility. The pupils were myotic. There was a retention of the urine and feces. Autopsy showed a fracture of the vertebra which caused complete transverse lesion of the cord in the region of the first and second thoracic segments. Above this lesion, in the seventh and eighth cervical segments, there were symmetrical areas of softening in the gray matter The case shows that the motor centers in the spinal cord are arranged in cell groups situated in the vicinity of the anterior roots and that paralysis resulting from lesions in these cells has the same distribution as would be expected from cutting a corresponding anterior root. The anesthesia which results from lesions in the gray matter has the same radicular distribution as the anesthesia from lesions in the posterior roots.

2. *Traumatism to the Left Facial Nerve.*—The patient had a left facial palsy following an injury to the head four years before, in which there was apparently a fracture of the base of the skull. Examination showed paralysis in the left frontal region and an inability to close the left eye. There was a partial paralysis of the muscles about the left side of the mouth, accompanied by slight contracture and spontaneous movements. The pathogenesis of facial spasm, according to Brissaud, is an irritation of the reflex arc. Usually the centripetal portion of the arc is irritated; for instance, eye-strain by irritation of the trigeminal. Rarely, as in this case, the centrifugal portion of the arc is irritated and gives rise to a facial spasm.

(Vol. 19, No. 14. July 30, 1911)

1. Varicose Dilation of the Posterior Spinal Viens. JUMENTIÉ and EUG. VALENSI.
2. A Case of Multiple Sclerosis, with Bilateral External Ophthalmoplegia and Incomplete Atrophy of the Optic Nerve. ALEX. LAMBRIOR and MME HÈLÉNE PUSÇHARIU.

3. Another Case of Myxedema with Cerebellar Symptoms. GOTTHARD SODERBERGH.

1. *Varicose Dilation of the Veins of the Spinal Cord.*—At autopsy, in a man forty years of age, who had had a flaccid paraplegia and abolition of the reflexes for three years, it was found that the posterior spinal veins were enlarged, extremely sinuous, and having something of the aspect of a varicocele. The varicosities extended from the sixth cervical segment to the seventh dorsal segment. Unfortunately, the autopsy was incomplete and no cause for the condition was discovered.

2. *Case of Multiple Sclerosis.*—The patient was sixty years of age. There was a complete bilateral external ophthalmoplegia. The pupils were equal, 2 mm. in diameter, reacted feebly and slowly to light and in accommodation. Visual acuity was diminished and there was a marked pallor of the temporal sides of both optic nerves. The diagnosis of multiple sclerosis was based on the intention tremor, scanning speech, and spasticity of the legs. Syphilis was ruled out by the absence of any signs of it and the negative results of the treatment. The case is peculiar in that it developed at such a late age and that the lesions were symmetrical.

3. *Myxedema with Cerebellar Symptoms.*—The patient was forty-seven years of age. At about the age of twelve she developed myxedema: dry skin, loss of teeth, increase of subcutaneous tissue and vertiginous attacks, and complained of marked fatigue on movement. The most interesting features were the presence of adiadococinesia on both sides, marked cerebellar catalepsy, cerebellar gait, and a cerebellar tremor shown very well in writing. There was also a positive Chvostek. Under treatment with thyroid extract, these symptoms completely disappeared. It is particularly interesting to note that, whereas the myxedema causes fatigue on movement very quickly, this patient was able to assume a cataleptic position and hold it without fatigue.

CAMP (Ann Arbor).

Book Reviews

THE PRACTICAL MEDICINE SERIES. Nervous and Mental Diseases. Edited by Hugh T. Patrick, M.D., and Charles L. Mix, A.M., M.D. Volume X, series 1909, and volume X, series 1910. Chicago, The Year Book Publishers. Pp. 248.

These volumes coming out every year have a distinct place in the literature of nervous and mental diseases. They present a really very excellent summary of the situation, and the profession is indebted to the editors for their painstaking care in their preparation The psychiatrist is apt to be somewhat disappointed by the limited space to which mental disorders are relegated, but this is probably inevitable from the fact that the editorial work is done by men whose primary interest is neurological. The neurological portions of the volumes are far the better, while the mental part gives one the impression that the sources of information from which the editors drew are limited to two or three American and English journals.

WHITE.

THE HARVEY LECTURES. 1909–1910. J. B. Lippincott Company, Philadelphia and New York.

Among the general papers, in this collection of papers of high merit, we would single out two of special interest to our readers, The Influence of Sensory Impressions in Scientific Deductions, by Otto Cohnheim, and the Present Status of Aphasia and Apraxia, by Adolf Meyer. Not that the work on Nephritis, on Renal Activity, and Renal Strictures, on Inflammation, and on Uric Acid in Gout, do not concern neurologists or psychiatrists, but they lie more to one side in the direct focus of interests of students of the nervous system.

Cohnheim's paper deals rather exhaustively on sensory impressions and the digestive tract, the effects of altitude on the blood composition, and the problems of muscular activity and sensory stimulation.

Meyer presents a short review of previous work on aphasia and apraxia, and then gives short analyses of several cases, chiefly drawn from the New York Hospital services. His paper is one that demands attention, stimulates enquiry, and shows bravery in offering no simple explanations. It is well worth reading.

JELLIFFE.

STUDIES ON THE PSYCHOLOGY OF SEX. Vol. VI. Sex in Relation to Society. By Havelock Ellis. F. A. Davis Company, publishers, Philadelphia.

The attitude of mind assumed by members of certain classes of society is that no such question as sex exists. The ostrich of the fable may well adorn their coat of arms and represent their motto. For the author of this book, however, such a trivial subterfuge makes no appeal, and he has entered into the problem of sex in relation to society as no English writer has ever done before.

His previous volumes are well known to our readers. We are tempted to pronounce this his most important work, for the individual is, after all, much less interesting in his peculiarities, aberrations and normal functionings, than the social body in its group reactions to the same problem.

It strikes us as thoroughly in accord with the best reasoning for the author to have devoted so much time to the evolution of many of our institutions, and their relation to sex problems. Society is encrusted with the living and dead barnacles of former times, and few individuals are aware how formal, borrowed, and imitative are their speech symbols and their attitude of mind towards all questions. Ellis shows how these formalizations of opinions have come about.

The chapter headings give a notion of the scope of the work. The Mother and her Child; Sexual Education; Sexual Education and Nakedness; Valuation of Sexual Love; Function of Chastity; Sexual Abstinence; Prostitution; Conquest of Venereal Diseases; Sexual Morality; Marriage; The Art of Love; and the Science of Procreation.

This is an ambitious program. It deals with the most intricate social combinations, facts that stare us in the face at every instant. Ellis has handled it remarkably well, and his work will be of great service in our understanding of the problem. Through such understanding, the physician, and particularly the worker in the nervous system, can become a power for sound therapeutics in this most difficult and most important field of medicine.

JELLIFFE.

THE NERVOUS LIFE. By G. E. Partridge, Ph.D. New York, Sturgis & Walton Company, 1911. Pp. viii + 216.

The author of this work indicates in his preface that he is laboring under a common delusion, as he expresses it "so the problem of the nervous life is before us, especially in America, as at no other time in history." I suppose every generation has made that same remark about their own time. We find that way back in the early Roman Empire where we see the wealthy citizens living lives of luxury, overeating, overdrinking, keeping late hours, subjected to the excitement of speculation with all sorts of enterprises launched upon the seas, maintaining country villas at distances from Rome to which they journeyed in order to try and steal a few hours of rest, entertaining lavishly, doing all the things that to-day write down our life as strenuous.

The book is a readable discussion of the regulation of our life, and is controlled by the general idea that nervous health "is a problem of the adjustment of the individual as a whole to his world." The author has shown by the bibliographies at the end of the chapters that he has drawn his information from good sources, but from sources that make him deal rather in generalities than in helpful suggestions. The book is readable by most any one. It is wholesome in its attitude, and therefore commendable.

WHITE.

SCIENTIFIC MENTAL HEALING. By H. Addington Bruce. Boston, Little, Brown, and Company, 1911. Pp. viii + 258.

Another volume from the facile pen of Mr. Bruce. His writings have done much to popularize various applications of psychotherapeutics. He

is always an interesting writer, always says what he has to say simply and entertainingly, makes his story replete with anecdote, and holds the attention of the reader. Not the least interesting portion to the reviewer is the chapter on Masters of the Mind, which gives some very interesting facts regarding the lives particularly of Dr. Boris Sidis and Dr. Morton Prince.

The book represents one of the best forms of lay medical writing. It does not, naturally, permit of scientific discussion, being a simple statement of the author's views in unscientific language. In many instances we could not follow the author in agreement, for example, his comments upon suggestion do not at all commend themselves to acceptance, neither does his general attitude towards hypnotism as a therapeutic resource. However, there is much difference of opinion in all these matters among those who are most competent to speak, and so we will not find fault with him because he may differ from some of the rest of us. His books can be confidently recommended to the laymen for information in matters mental.

WHITE.

ANIMAL INTELLIGENCE. EXPERIMENTAL STUDIES. By Edward L. Thorndike, Teachers College, Columbia University. The Macmillan Company, New York.

Some of these studies have been available before, and have been commented on in the JOURNAL. We welcome, however, having the series of ingenious studies devised by the author gathered into one volume, not only for ease of reference, but for the opportunity taken of a more systematic presentation of the general subject.

The era of anecdotal comparative psychology was about on the wane as Morgan, Thorndike, Franz, and other workers took up direct experimentation. Their studies have resulted in so modifying our concepts of the animal mind, as to amount almost to a reversal of attitude on the entire subject.

The author's ending sentences present his viewpoint so accurately as to suggest their reproduction here: "Nowhere more truly than in his mental capacities is man a part of nature. His instincts, that is his inborn tendencies to feel and act in certain ways, show throughout marks of kinship with the lower animals, especially with our nearest relatives physically, the monkeys. His sense powers show no new creation. His intellect we have seen to be a simple though extended variation from the general animal sort. This again is presaged by the similar variation in the case of the monkeys. Amongst the minds of animals, that of man leads, not as a demigod from another planet, but as a king from the same race."

The book is well worth reading. There are occasional lapses into dogmatisms, dear to the pedagog, but these are possibly pardonable in view of the character of the subjects under discussion, and they in no way interfere with the enjoyment of a thoroughly readable volume.

JELLIFFE.

AN INTRODUCTION TO THE STUDY OF HYPNOTISM, EXPERIMENTAL AND THERAPEUTIC. By H. E. Wingfield, M.A., M.D., B.C., Cantab. New York, William Wood & Company, 1910. Pp. 175.

This little book, the author states in his preface, is an attempt to answer the question "what is hypnotism?" It represents a very fair set-

ting forth of the situation from the standpoint of the days of Liébeault. There is practically nothing in the book that has been added since the days of the ascendancy of the Nancy School. The author falls into the usual habit of dealing with "suggestion" as if it were a something to be handled like a scalpel or a needle, and so something with which things could be done to the patient. He fails entirely to comprehend in any way apparently the nature of the ideas that are included in the general concept of suggestion or what is really accomplished by what is usually termed suggestion. The book is simple, it is readable, and it will do sufficiently well for the lay reader, but offers nothing of importance or even information to the physician.

WHITE.

DIE PSYCHOPATHISCHEN KONSTITUTIONEN UND IHRE SOCIOLOGISCHE BEDEUTUNG. Von Dr. med. Helenfriederike Stelzner. S. Karger, Berlin.

Ziehen has developed the idea of the psychopathic constitution both in his text book and in periodic literature. The borderland between the normal and the psychotic has always attracted students of mental problems, many of whom have made lasting contributions to the subject.

The present thesis is a conscientious and thorough piece of work. The authoress recognizes the immense social importance of these types of individuals, and from the rich clinic of the Charité has been able to present a document of more than usual interest.

She first discusses the heredity question, but gives us no family trees, such as are demanded by present-day research in this difficult field. In a second chapter the exogenic factors of the milieu, alcoholism, disease, struggle for existence, etc., are taken up. The symptomatology is the most interesting chapter, in that the authoress has had opportunity to analyze the intelligence tests, which Ziehen demands, as a routine procedure, of his assistants in the Charité Clinic, and she has also carried on a number of such tests herself. We thus have, almost for the first time, a series of fairly objective criteria, upon which some diagnostic structure can rest, instead of the general hazy notions derived from the days of Morel. The value of these tests, in separating the hebephrenic and the high grade feebleminded, from the constitutional psychopath, is inestimable.

The sexual life of these individuals offers many striking features from the standpoint of precocity and exaggeration. Suicide is a frequent phenomenon. In the presentation of this section, Dr. Stelzner is singularly able, by reason of her previous extensive and thorough study of this phase of conduct.

Criminality, prostitution, tendencies to antisocial acts, etc., these are all well discussed, and special emphasis is given to the general efforts of a philanthropic nature that will provide means of combating the growth of these psychopaths.

JELLIFFE.

Notes and News

PRELIMINARY PROGRAM OF THE MEETING OF THE AMERICAN NEUROLOGICAL ASSOCIATION, TO BE HELD IN BOSTON, MAY 30 AND 31 AND JUNE 1, 1912

"Note on the Examination of the Cerebrospinal Fluid for Arsenic Following the Administration of Salvarsan," Dr. Carl D. Camp, of Ann Arbor, Mich.; "The Biological Conception of a Nervous System," Dr. Stewart Paton, of Princeton, N. J.; "Clinical Confirmation of the Hypothesis that Disordered States in the Parents Produce Defective Offspring," Dr. S. D. W. Ludlum and Dr. E. P. Corson-White, of Philadelphia, Pa.; "An Examination of the Ductless Glands in Eight Cases of Dementia Præcox. Preliminary Report," Dr. F. X. Dercum and Dr. A. G. Ellis, of Philadelphia, Pa.; "Myasthenia Gravis," Dr. M. Allen Starr, of New York City, N. Y.; "Report upon a Case of Acute Bulbar Palsy, with Autopsy and Histological Findings—Type: Anterior Poliomyelitis," Dr. Alfred Wiener, of New York City, N. Y.; "Acute Bulbar Palsy Following in the Wake of Mumps," Dr. Joseph Collins, of New York City, N. Y.; "Temporary Paralysis of Right Vocal Cord with Sensory Disturbance on Left Side of Body," Dr. David I. Wolfstein, of Cincinnati, Ohio; "Cerebello-Tegmental Lesion from Occlusion of Branches of the Superior Cerebellar Artery," Dr. Charles K. Mills, of Philadelphia, Pa.; (Microscopical Report) Dr. William G. Spiller, of Philadelphia, Pa.; "The Relations of the Fifth Nerve," Dr. M. A. Bliss, of St. Louis, Mo.; "Tabes Dorsalis: The Exhaustion Theory of its Pathogenesis with Experimental Evidence," Dr. Colin K. Russel, of Montreal, Canada; "Some Atypical Forms of Tabes and Paresis Considered in the Light of Serodiagnosis," Dr. C. Eugene Riggs, of St. Paul, Minn.; "Motion Pictures of Nervous and Mental Diseases," Dr. T. H. Weisenburg, of Philadelphia, Pa.; "Chronic Meningitis," Dr. Joseph Collins, of New York City, N. Y.; "Preliminary Report upon a Hitherto Undescribed Type of Familial Palsy," Dr. L. Pierce Clark, of New York City, N. Y.; "The Treatment of Spinal Cord Compression," Dr. Israel Strauss and Dr. Philip W. Nathan, of New York City, N. Y.; "A Further Communication on Syphilitic Disease of the Cervical Spine," Dr. Frank R. Fry, of St. Louis, Mo.; "Syphilitic Spondylitis," Dr. J. Ramsay Hunt, of New York City, N. Y.; "The Etiological Relation of Syphilis to Aran-Duchenne Muscular Atrophy," Dr. William G. Spiller, of Philadelphia, Pa.; "Acute Infectious Transverse Myelitis with Complete Recovery, Due to the Virus of Poliomyelitis," Dr. B. Sachs, of New York City, N. Y.; "Induced Paralysis—Its Therapeutic Application in a Case of Tic," Dr. Sidney I. Schwab, of St. Louis, Mo.

Neurological Economics Symposium: Introductory Remarks, Dr. Charles L. Dana, of New York City, N. Y.; "Industrial and Occupational Neuroses," Dr. M. Allen Starr, of New York City, N. Y.; "Social Work in its Connection with Neurological Dispensaries," Dr. J. J. Putnam, of Boston, Mass., and Dr. Joseph Collins, of New York City, N. Y.; "Re-

tardation and Constitutional Inferiority in Connection with Education and Crime," Dr. H. T. Patrick, of Chicago, Ill., and Dr. J. J. Thomas, of Boston, Mass.; "The State Psychopathic Hospital in Boston," Dr. Walter Channing, of Boston, Mass.

"Presentation of Brain-Specimens Exhibiting Lesions of Special Interest for the Localization of Aphasic Disorders," Dr. LaSalle Archambault, of Albany, N. Y.; "A Contribution to the Study of the Cerebral Mechanism of Reading," Dr. William Hirsch, of New York City, N. Y.; "A Contribution to the Study of Aphasia Based upon the Pathological Findings of Three Cases," Dr. Alfred Gordon, of Philadelphia, Pa.; "Epilepsy in the Adult," Dr. Edward D. Fisher, of New York City, N. Y.; "The Function of the Pineal Gland—An Experimental Study," Dr. Charles L. Dana and Dr. William N. Berkley, of New York City, N. Y.; "Central Pain," Dr. John H. W. Rhein, of Philadelphia, Pa.; "Cerebral Metastasis of Hyponephroma," Dr. Joseph Collins and Dr. Robert G. Armour, of New York City, N. Y.; "Glio-Sarcoma of the Occipital Lobe," Dr. N. E. Brill, of New York City, N. Y.; "The Neurological Disturbances of Alzheimer's Disease," Dr. Albert M. Barrett, of Ann Arbor, Mich.; "Arteriosclerosis Probably not an Important Factor in the Etiology or Prognosis of Involution Psychoses," Dr. G. L. Walton, of Boston, Mass.; "A Case of Acute Confusional Psychosis Following Hysterectomy," Dr. Richard Dewey, of Wauwatosa, Wis.; "Terminal States in Pellagra Resembling General Paresis," Dr. Eugene D. Bondurant, of Mobile, Ala.

EXTENSIVE COURSE IN NEUROLOGY AND PSYCHIATRY AT FORDHAM UNIVERSITY, N. Y.

Beginning Sept. 9, 1912, and lasting for three weeks an Extension Course in Neurology and Psychiatry will be given at Fordham University, N. Y. City. Dr. Henry Head, of London, Dr. Gordon Holmes, of London, Dr. N. Achucarro, of Madrid, Dr. C. J. Jung, of Zurich, Dr. Colin K. Russell, of Montreal, Dr. J. V. May, of Albany, Dr. H. H. Goddard, of Vineland, New Jersey, Dr. Carl Alsberg, of Washington, are among those who will lecture. Complete courses in the anatomy, pathology, and chemistry of the nervous system will be given, and clinical courses in neurology and psychiatry, methods of examination, etc. The fee for the course will be $45.00. Full particulars will appear later.

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Original Articles

DYSBASIA LORDOTICA PROGRESSIVA, DYSTONIA MUSCULORUM DEFORMANS—TORTIPELVIS[1]

By Joseph Fraenkel

NEW YORK

On the basis of four cases and because the literature is silent on the subject Oppenheim[2] attempts to separate from the illy defined and extensive genus of "tics," "myospasms," "choreas," "athetoses," "spasmodic hysterias," a nosologic variety under the name: "Dysbasia Lordotica Progressiva—Dystonia Musculorum Deformans."

He characterizes this condition as follows: It occurs in children and young adults of the Jewish race, and consists essentially of (*a*) a deformity around the pelvis, and (*b*) of tonic and clonic myospasms of the musculature around the pelvic girdle associated or not with similar twitchings of other muscles.

The difficulty begins frequently with slight symptoms in the upper extremities; but wherever it begins the lower extremities are permanently and severely affected—the musculature of the thigh, pelvis and lumbar part of the vertebral column.

In reclining position most of the symptoms disappear, except a variable degree of deformity around the pelvis. Attempts to stand—particularly to walk—activate the condition.

[1] Read before the New York Neurological Society, December 5, 1911.

[2] "Uber eine eigenartige Krampfkrankheit des kindlichen und jugendlichen Alters (Dysbasia Lordotica Progressiva, Dystonia Musculorum Deformans)," *Neurologisches Centralblatt*, October 1, 1911.

A marked lordosis of the lower dorsal and upper lumbar parts of the vertebral column, with inclination of the pelvis and particu-

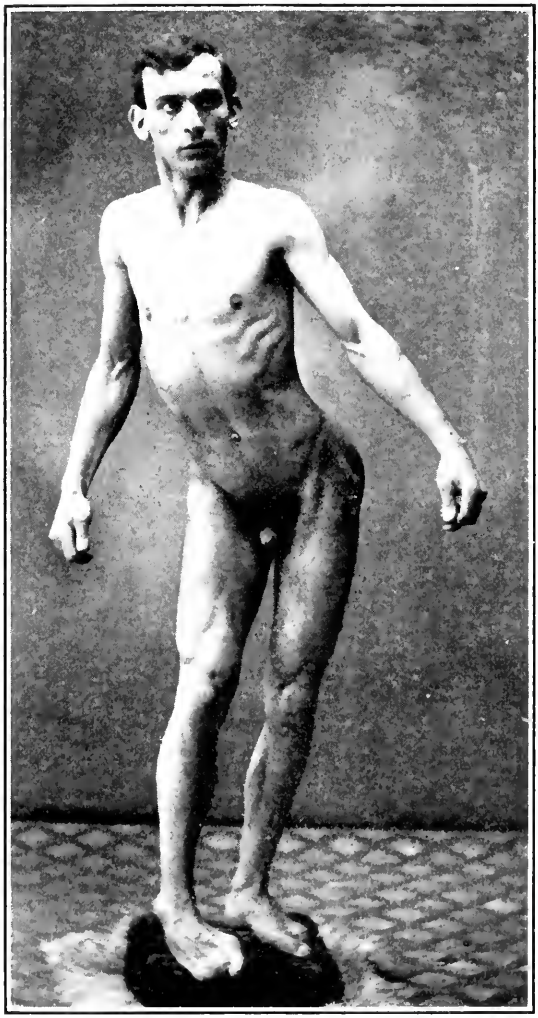

FIG. 1.

lar prominence of the buttocks, are, as it were, the stigma of the condition (Fig. 1).

The most characteristic disturbance is noticed in the gait of

these patients. Oppenheim calls it the most curious thing he ever encountered, surpassing the deformities, distortions and compensatory motor efforts seen in cases of poliomyelitis and dystrophy. The gait is very bizarre, resembling the locomotion of a quadruped; best described as "monkey gait," "dromedary gait."

At first sight the suggestion of a hysterical nature of the condition is very strong, and indeed this diagnosis is most frequently made.

During locomotion the attitude changes continuously, getting clownish in character; the patient soon shows evidences of strain, the face flushes, the pulse rate is increased, and profuse perspiration sets in.

In the recumbent position most of the deformities disappear, particularly the lordosis, but the legs even in the supine position do not get entirely relaxed. In all Oppenheim's cases the upper extremities were involved also, but to a far less extent. Signs of organic damage to the nervous system are absent. Variations in the tendon reflexes are noted; but these are transient and not uniformly present.

Oppenheim is not willing to look upon this condition as a neurosis, but is convinced that it has a definite anatomic basis, the identification of which he confidently expects. He believes, as the name implies, that we are dealing with a disturbance of the coördination of muscle tone, with a state of essential hypotonia.

According to Oppenheim the only mention that the literature contains on the subject is found in a communication by Ziehen,[3] who describes an analogous state and calls it "tonic torsion neurosis."

The etiology of the disease is unknown; it runs a chronic, progressive course, and treatment has no influence. Various methods show transient benefit. In one of Oppenheim's cases the symptoms disappeared after metallotherapy for a time. In one of my cases reëducation helped for a time, and so did intraspinal injections of magnesium sulphate in two for a shorter time.

During the last few years four similar cases came under my observation which I believe it worth while to place on record.

CASE I. The first case was presented before this Society at the meeting of October 6, 1903, by Dr. Leszynsky, to whom I am indebted for the following notes.

[3] "Allegemeine Zeitschrift f. Psychiatrie," LXVIII, *Neurol. Centralblatt*, 1911, S. 109.

J. G. (Fig. 2), born in the U. S., 12 years of age, Christian, is the sixth and youngest child in the family and was born at full term by forceps delivery, without suspended animation. Mother died seven years ago, cause unknown. Father is alcoholic. Other children in good health. Patient has never had convulsions. He was always of average intelligence and learned to talk and walk early. Nothing abnormal was ever noticed, and he attended public

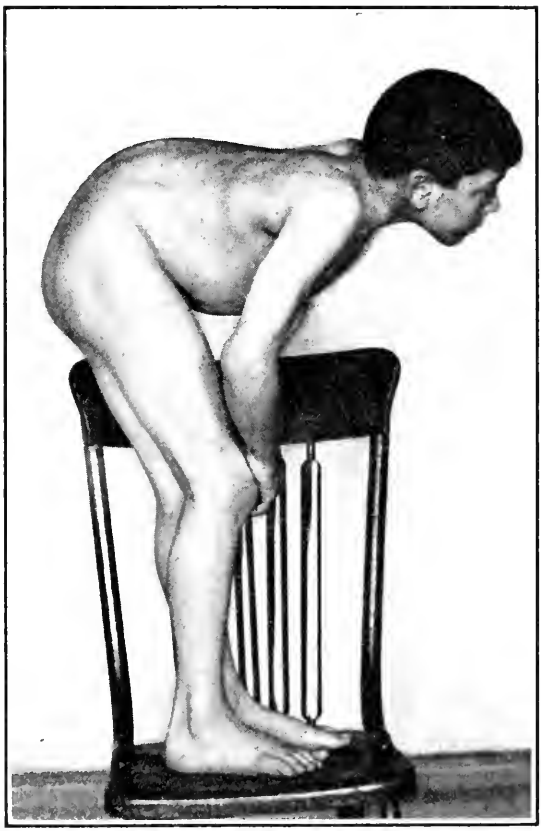

FIG. II. Case I.

school. He always showed great muscular development and was unusually strong for his age. He seemed perfectly well until fourteen months ago, when he began to walk in a peculiar manner with his body bent forward. Soon after he told his family that a boy had kicked him in the back. He also stated at the hospital that he had seen an old man in the neighborhood who walked in

a similar way, that he had imitated him, and then began to walk likewise. But his relatives when questioned had never heard of this before. This statement was not made by the patient spontaneously, but was evidently elicited as an affirmative reply to a leading and suggestive interrogation, and is therefore of questionable value.

He was admitted to the Lebanon Hospital March 9, 1903, and found to be in good general health. In recumbency, or while lying on his abdomen, the trunk and extremities remained in a horizontal and relaxed position. When he attempted to assume an erect posture or to walk, the trunk became flexed on the thighs almost at a right angle, and the head semiflexed on the thorax. In this attitude he walked about groping with his hands, but he managed to get around with considerable ability without injury.

Upon examination both lower extremities became rigid when placed either in extension or flexion, and the knee jerks were unobtainable by any form of reënforcement, as there seemed to be an excess of cerebral inhibition. His muscular power and development were remarkably good, and a thorough investigation of the nervous system and of the vertebral column, etc., proved absolutely negative as to evidence of organic disease. Several days later, the knee jerks were successfully demonstrated. After remaining in the hospital 16 days he cried and begged to go home, attempting to run away, and was discharged completely recovered, being able to walk in a normal manner. During his sojourn in the ward it was often noted that he could walk erect when he thought he was unobserved.

He remained well for several months, running about the streets like other boys. He was readmitted to the hospital July 1 in the same condition as at first described, but of a more exaggerated degree. His grotesque attitude and the result of examination were practically the same as at the first admission, but more force was required to overcome the flexion and hold him in an erect position. Pulse has ranged from 84 to 100. T. and R. normal. Urine of late has shown on excess of indican. Blood: Hmg. 90 per cent.; no leucocytosis.

Recent Examination.—Lower extremities: Muscular power and resistance in both good. Motility in all joints normal; occasional slight transient rigidity of extensors during manipulation; both knee jerks +, left + + with ankle clonus fairly well marked but of a spurious type. (This is not always demonstrable.) No clonus on right; both Achilles reflexes present, left +; both plantar reflexes absent; abdominal and cremasteric reflexes normal; no objective sensory disturbance; visual fields not tested; no complaint of pain or sensitiveness over vertebræ; during sleep nothing abnormal has been noticed. He can suspend himself by the hands and by the weight of the body maintains an erect attitude for

several minutes. There is no evidence of spasmodic flexion while in the dorsal or prone position.

It will be observed that the sudden flexion of the pelvis on the thighs only takes place in attempts at standing, the condition corresponding somewhat with that described by Charcot many years ago as a flexion type of astasia abasia. For want of a better name we must call it hysteria. (In hospital about six months—no improvement.)

The same patient was shown a second time before this Society on May 5, 1908, by Dr. J. R. Hunt, who said:

The patient, 15 years old, commenced to show clonic muscular contractions of the trunk muscles in January, 1903. At that time he showed a tendency to stoop and bend forwards; this gradually became more marked, and finally his body became fixed a large part of the time in this bent position while sitting, standing or walking. Various methods of treatment were tried without benefit, and the patient was finally subjected to a long-continued course of psychophysical therapeutics by Dr. R. B. Kruna, with decided improvement, as he was now able to get about in a fairly comfortable manner. It was because of this very considerable improvement and the method of treatment employed that Dr. Hunt brought this case before the Society. He regarded it as an unusual type of myoclonia, a form of tic convulsif involving the muscles of the trunk. There were no evidences of any organic diseases of the nervous system, and at no time were there any stigmata or crises suggesting an hysterical origin. Mentally the boy was bright and intelligent and there were no impulsions, obsessions or phobias, such as not infrequently accompany the generalized forms of tic convulsif in early life.

Dr. Richard B. Kruna, in demonstrating his method of treatment in the case shown by Dr. Hunt, said that when the boy first came under his observation the body was bent forward to an angle of about 80 degrees to the legs; at the same time the spine showed lateral flexion and rotation, as well as the neck. The tic spasms from which he suffered had developed during six months, and had gradually increased in force. The boy had no pain, but in walking the spasms pulled his trunk and head downwards until he was practically doubled up, with his head near his knees. In this position he would brace himself, with one hand upon his knee and the other upon some object near him, such as a table, chair, etc., or upon the ground. With these disadvantages, his gait was of course irregular and jerky, yet surprisingly fast ("monkey-gait"). A careful examination of the patient showed nothing abnormal organically, excepting an increase of indican in the urine and ankle-clonus of the left foot.

To find relief from this distressing condition, which had forced him out of school and rendered him an object of ridicule and even

fright, he spent over four years at various orthopedic and general hospitals. Every resource of orthopedic surgery was tried, including a variety of plaster-of-Paris jackets, steel braces, extension under anesthesia, and finally an operation, consisting in division of the rectus and ileo-psoas muscles. All these were without effect, as was also an injection of magnesium sulphate solution into the spinal canal. The latter caused temporary paralysis, but did not cure him. (Fig. 3, Case I.)

The patient was referred to Dr. Kruna at Dr. J. Fraenkel's suggestion over two years ago for psychophysical treatment: this has been faithfully carried out, and the patient was now able to stand and walk erect, and in the course of another year, the speaker said, his condition would probably be entirely normal. At present, he was able, by voluntary muscle action, to antagonize every tic contraction, but this balancing activity had not yet been developed to the point of being automatic, as it normally should

FIG. III. Showing Case I after Magnesium Sulphate Injection.

be. The speaker then explained briefly the psychical régime which was part of the psychophysical therapeutics, which included the development of the patient's intellectual and moral strength, the training of his powers of initiative and inhibition, regularity and system in habits, etc.

The physical training consisted in medical gymnastics, starting from an analysis of the tic attitude into its components, the elementary muscle-spasms. Each of these tic elements had to receive a remedying antagonistic muscle-exercise. At the onset, the patient was not able to make the antagonizer of a tic-muscle contract by itself. This required a series of assisted exercises. In these the patient was helped by an assisting force, outside of his own muscular effort, to overcome the tic-spasm. The percentage of efficiency of the patient's own efforts would show increase according to their repetition, and the assisting force was correspondingly diminished. Finally, the assisted exercises became unnecessary and were replaced by unassisted ones. The

first landmark of progress was the ability to overcome every tic element by its antagonistic action, and every tic attitude by its counter attitude; the second, identical with reëstablishment of the normal condition would be reached when these voluntary antagonistic actions, by untiring exercise, had become automatic.

Dr. William M. Leszynsky, who had presented the same patient at a meeting of this Society several years ago, said that Dr. Kruna was certainly to be congratulated upon the brilliant result he had obtained from his psychophysical method of treatment. When Dr. Leszynsky had him under his care there was some improvement after a similar method of treatment in the hospital, but within five months he relapsed into his original condition. He was then sent to the Hospital for Ruptured and Crippled, where he was fitted with various kinds of apparatus, and several muscles tenotomized without relief. He was finally transferred to the Montefiore Home. The diagnosis of the case at that time was hysteria, and his physical condition was associated with a peculiar mental attitude which seemed to point to some form of degeneracy.

This patient came under my observation simultaneously with the two subsequent ones in 1905. I can add little to the description so far reported. Both cases (cases I and II) we treated by intraspinal injection of magnesium sulphate. The effect upon the deformity and spasms was certainly striking, although temporary and very transient. I refrained from repeating this procedure because the reactions were, at first, alarming: fever, embarrassment of respiration, and slight coma.

In discussing these cases at the time with Dr. Dana we were impressed then by their individuality, and I thought they might be designated as cases of "tortipelvis."

Very lately when I saw J. G. again his condition was practically the same. While in my office he showed the most bizarre contortions, particularly on the left side of the body. He walked out in a "quadruped" fashion, alighted from his bicycle with dexterity and alacrity, and evidently found his way through the crowded city traffic.

Case II. For the abstract of the history of this patient I am indebted to Dr. J. Wachsmann of the Montefiore Home.

J. S. entered the Montefiore Home November 3, 1905; discharged March 12, 1907; 24 years old on admission. Family history negative. Previous history: born in Washington, D. C. Jewish. Measles at 3. Malaria contracted in Spanish-American war. Suffered for one year from it. Habits, good. Occupation, electrician. No venereal infection. (Figs. 1, 4, 5.)

Present illness began two months after onset of malaria (5 years ago), with tremor of left toes, exaggerated by emotion. Within one year muscles of left lower extremity became rigid. Two years after onset ankle became inverted. Deformity could

be overcome actively in sitting or recumbent posture, but not in standing. About same time body began to arch backwards. Lost 30 lbs. in weight. Anorexia, constipation. No pain. Eyesight failing for the last five months. Complains of cramps in muscles of lower extremities.

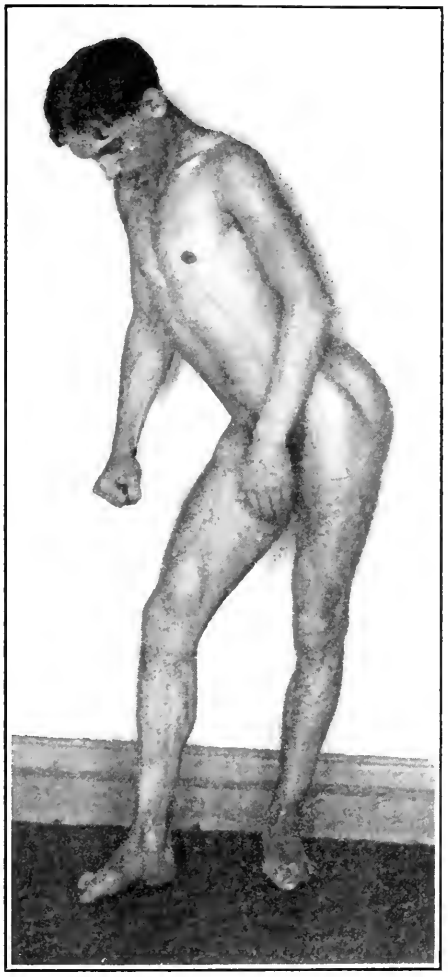

FIG. IV.

January 29, 1906. Father was once paralyzed in all four extremities, but made perfect recovery. Uncle on father's side was affected with tic of left eyelid.

Physical examination November 3, 1905. Gait: as if patient

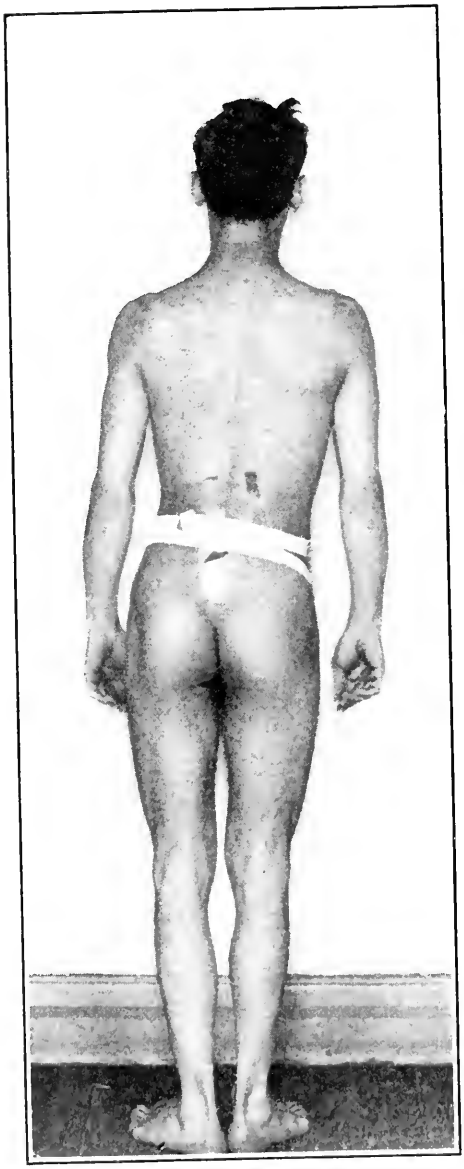

FIG. V. Showing Case II after Magnesium Sulphate Injection.

were losing his equilibrium. Long steps. Walks on outer edge of left foot. Deformity reducible—no contracture. Reflexes normal. No shortening. About ½ inch atrophy in left thigh. Joints free. Electrical reaction negative. Eyes: pupils dilated R > L—react. Throat: pharyngeal reflex present. Sensibility: (1) Hypalgesia, distribution of both nervi cutanii femoris; (2) hypalgesia of left side of face.

February 8, 1906, 6 c.c. of mg. sul. 25 per cent. solution injected into spinal canal with result as follows (Fig. 4): (1) Stands perfectly straight; (2) gait more steady; (3) pseudocontracture much diminished; (4) cannot pass urine voluntarily. Some anesthesia of tip of penis. Examination of urine, blood, gastric contents and feces negative.

February 2, 1906. Examination of excised piece of muscle shows no atrophic changes, but possibly some parenchymatous degeneration.

The patient was discharged in better physical condition, but the disease unchanged.

Case III. School boy, eleven years of age, born in the U. S., Christian. One year ago last January was perfectly well. Began to walk lame in left leg two weeks after a fall down stairs leading from one story to another. He was not hurt at the time, and walked as well as ever immediately after the accident. He complained of getting tired, but never of pain. Lameness grew progressively worse for about 4 to 6 weeks, then stationary. Walked as though loose from the hip-joint, and throwing leg out to the side, but not on the side of his foot; has been able to walk and run during his illness.

Had a hip and leg spica plaster cast put on in February (20) by Dr. Ashley of New York. He walked better with the cast, no longer threw his leg out.

In March, 1910, left arm began to show symptoms—could not button clothes as well, and was awkward in movements with left hand, but can play baseball. Two weeks ago tremor in arm was first noticed, although patient had complained of jerky, nervous feelings in both leg and arm for some time before. During period when he wore cast he began to walk on outer side of foot. No atrophy noticed at any time. No pain at any time. Very seldom had headache, and these very mild and "probably from stomach." No vomiting or dizziness. Eyesight good. Good appetite. No cough. No chills or fever. Was in best of health all his life. No paresthesias. Nocturnal enuresis for 3 years at intervals. No incontinence of stool.

Father and mother alive and well. Sister one, well and strong. No hereditary history, all disease denied, 9 month's infant, normal birth. Fourteen months walked. Talked right time. Teeth at right time. No convulsions. Control of bladder before two years old. Measles 4 years old. Three or four years ago had

Fig. VI. Case III.

chills and fever, one part of day quiet with malaise, other part felt bright. Doctor called it "intestinal fever." Was constipated. Was in bed a week. Perfect recovery. Education, good scholar.

May 3, 1910. Measurements of calves, R. 25.7, L. 26.3. Left calf looks fuller and rounder. No limitation of motion of left leg. Muscular power of left leg about equal to right. Thigh, R. 34.5 cm., L. 31.7 cm., 12 cm. above patella. Muscles of left leg are in almost constant spasm. Least movement causes tonic spasm especially around hip-joint. Muscles feel rigid, hard, especially adductors. Leg cannot, apparently, be flexed on abdomen, due evidently to spasm of extensors. Leg is held somewhat adducted, and rotated inward. Patient walks on outer margin of foot. Left arm is more or less constantly in state of clonic pronator spasm, fingers flex slightly. Can stop by closing hand firmly and making arm rigid. Power excellent R = L.

May 12, 1910. X-ray taken on May 6. Report as follows: There is a slight decalcification of the head and neck of the femur, and periostitis extending from the head to the greater trochanter, along the upper surface of the neck. There is apparently a tilt of the pelvis, and I believe confirmatory plates should be made higher up to determine whether there is any involvement of the spine.

CASE IV. L. R., 12 years old. Jew. Was seen by Dr. Gibney.

Born naturally; when 10 months old fell from a chair and had convulsions until teeth appeared. When three years old was run over right leg. At another time fell from a wagon. Still another time had some bicycle accident. During one year gait became impaired.

Well developed and nourished. Some swelling in region of right groin. Gait and attitude show marked kypo-scoliosis—lumbar. On walking spasmodic adduction—rotation. Is afraid to be alone in the room. Plantar reflexes—Babinsky type.

The histories of these patients have undoubtedly a definite ring of a family likeness. This impression is certainly strengthened by an inspection of the photographs of the cases here reported, and the one taken from Oppenheim's publication. The resemblance becomes striking indeed.

Upon analysis it becomes evident that we are dealing with a condition showing the following characteristics: (1) The symptoms are variable, fugacious and intermittent for a time. (2) Early they show a local predilection. (3) A permanent deformity around the pelvic girdle. (4) Spasmodic phenomena associated with function.

I believe that the analogy with essential torticollis forces itself upon one's attention. Possibly here, as in torticollis, the future

will show that there may be a symptomatic and essential variety. Indeed in my last two cases this thought occurred to me on account of the traumatisms to the hip which preceded the onset of symptoms and the X-ray findings in one case.

Etiologically no definite factors are so far apparent. The disease is not confined to the Jewish race. Malaria was noticed in two cases, and traumatism in two of my cases. In one case an hereditary factor is elicited; hysterical paralysis in the father and tic in the uncle. Apparently the disease develops upon a "tic" "spasmophile" soil, precipitated by various provocative causes.

If the Chwostek phenomenon proves to be as it is claimed, the signature of the spasmophile disposition, the examination for this symptom should be added to the routine examination of all tic cases.

The differences in the severity and localization of the tic symptoms could be explained by (*a*) the difference in the degree of the predisposition, and (*b*) by the degree of the local disposition, in consequence of function or overwork of the given parts, according to the theory of Edinger.

Thus in childhood and youth, when the facial and later the musculature of the pelvis and lower extremities are mostly used, facial and pelvic tics will be more liable to develop; and in later life tics of the shoulder girdle and upper extremities.

Such a widespread constitutional condition it would be difficult to identify with a uniform causative anatomic lesion. The lesion —structural—if found, will have to be interpreted as sequential.

It would seem more reasonable to look for the cause of such disorders in the epithelial bodies and parathyroid glands, in changes of their product and the influence upon the mineral metabolism, particularly the calcium metabolism. The coagulation time of the blood and the study of the calcium metabolism should be made part of the routine examination of the tic cases.

Finally, bearing in mind the fact proven by Jacques Loeb that the orderly, rhythmical function of muscle is dependent upon its being bathed by a serum containing definite proportions of mineral ions, systematic therapeutic efforts along these lines suggest themselves.

Regarding the classification and nomenclature it would seem safest for the present to classify the condition among tics and spasmophilias, and to individualize it by the name "tortipelvis."

FOUR INTERESTING CASES OF EMOTIONAL DREAM-STATE FROM THE PSYCHIATRICAL WARDS OF THE ROYAL CHARITÉ HOSPITAL IN BERLIN

By W. J. Sweasey Powers, M.D.

It has often been asserted that an emotional dream-state can occur only in conjunction with certain etiological factors. I have this assertion in mind while describing the following cases. They are brought forward together on account of the contrasting pictures which they present. The three last cases present a picture of psychic disturbance often seen in the psychiatric wards of the Charité Hospital, while the first case is one which rarely comes under scientific observation, and this fact probably accounts for the assertions afore mentioned.

The cases are from the Psychiatric Department of the Charité Hospital in Berlin and I am indebted to the courtesy of Geheimrat Prof. Dr. Ziehen for the privilege of using this material, for which I desire to express my appreciation.

Case I

The case was brought to the Charité for observation, because the patient showed psychic disturbance after an accident caused by himself and resulting in the death of a man.

The examination of the patient brought out the following points: Wilhelm R., aged 30 years, a native of Stettin, a city in North Germany, was brought into the hospital February 20, 1911. He is married and has five healthy children. He measured 5 feet 4 inches in height and appeared well developed. The abdominal organs, lungs and heart were found to be normal. The radial pulse counted 78 to the minute and was regular.

The nervous status was as follows: The eyes were normal with the exception of a slight strabismus which had existed since childhood. A very fine static and motor tremor was noticed. The knee reflexes were symmetrically exaggerated. Patellar clonus was demonstrated on both sides. The anconius and radial-periosteal reflexes were increased symmetrically. There was an excessive sensitiveness to the lightest prick of a pin-point. Rosenbach's test showed a rapid fluttering of the eyelids. The physical examination revealed no other points of interest.

The patient responded to the intelligence examination very satisfactorily and without any hesitation.

Heredity was shown to be negative.

The birth and childhood of patient were perfectly normal. He had received a common school education and had stood well in his classes, learning rather easily. He had acquired the trade of locksmith, but, for the last year and a half, he had been working as the operator of an electric crane in an iron foundry—his present position.

With the exception of one pint bottle of beer daily, he took no alcohol and smoked only occasionally.

Syphilis was denied.

No history of epilepsy or attacks of a similar nature was elicited.

It will be oberved from these details that physically and mentally the patient was a perfectly normal and healthy individual. His wife and his foreman describe him as being of a quiet and retiring nature, not easily excited, but very energetic, a hard worker, and absolutely trustworthy.

Patient was brought into the hospital about 10 a. m. on February 20, 1911. He was able to walk with support, but was entirely unoriented in regard to place, time and individuals. Later he lay quietly in bed, breathing slowly and deeply, occasionally murmuring unintelligible words and breaking out often into spells of violent sobbing with copious tears and moaning. About 7 p. m. his wife visited the patient, who for the first time since his entrance into the hospital showed a conscious interest in his surroundings. Patient recognized his wife, asked where he was, and told her, with tears running down his face, that he had constantly before his eyes the grewsome picture of a man's body jammed between the beam and the crane. In about an hour, patient again became unoriented, not recognizing his surroundings. He was transferred to the psychiatric department in the Charité at about 8:30 p. m. Here he seemed, outside of constantly muttering unintelligible words, more quiet, and passed the night with occasional periods of sleep. The next morning at 7 a. m. the nurse awakened him, and found him clear and quite able to ask about his surroundings. Outside of a nervous restlessness, he seemed normal.

About 9:00 a. m., the patient was able to give the following history. He had been working as the operator of the electric crane in the foundry for 1½ years. His foreman had full confidence in him and trusted him implicitly in this position. The day before, the patient had mounted to his post and began to operate the crane as usual. He had taken up a load with the crane and was running the machine backwards in order to deliver the load to its destination. Suddenly the machine stopped. He immediately shut off the power. Upon observing the electrical

indicator, he saw that the current was in order. He turned on the power once more but the machine did not move, then, shutting off the power again, he examined the apparatus. Finding nothing wrong, he stepped from his position to view the entire machinery and saw the body of a man jammed between the crane and a beam. The moment he saw the body so jammed, he screamed loudly and then knew nothing more. When asked if he felt any dizziness, palpitation of the heart, or a feeling of weakness when he saw the body, he replied that he felt nothing, that he screamed, but he could not say why he screamed. He did not know that anyone was to work above him, he had thought that the way was, as was usually the case, entirely free for the passage of the crane. From the moment that he screamed, he was entirely unconscious of what happened. He could not say how he got down from the machine, which ran on a track about 25 feet above the ground, nor how he got to the hospital. He did remember that his wife visited him and told him that he was in the hospital. However he did not remember being transferred to the psychiatric department nor how he spent the night. He complained of a great restlessness and of the fact that he had always before his eyes the horrible picture of the body jammed in between the machine and the beam. Towards evening, patient complained of lack of appetite; he could not eat on account of the feeling of restlessness, he dreaded the coming of night, because he always saw the jammed body before him, and begged to be allowed to go home to his wife and children. On the next day, an order for his release came from the police, which was read to him and afforded him quite apparent relief. He was advised to remain in the hospital a few days longer, but he insisted upon returning to his home.

When seen 2 months afterwards, he gave me the following description of his life after leaving the hospital: He had remained away from work a couple of days, but he was very restless and could not rid himself of the picture of the man jammed by the machine. He finally consulted a doctor who advised him to try to work. His foreman took him back, but gave him work to do on the ground. After 3 days the foreman told him he could, if he wished, try his old position of operating the crane. The patient accepted this offer and has been operating the crane satisfactorily ever since. He no longer feels the restlessness and the distressing mental picture does not come to him so often. When it does come, he can dispel it more quickly and it does not make the same awful impression as before.

The foreman under whom the patient worked was close by when the accident happened and was called immediately afterwards. I will give his own words in regard to what he observed: "I was called to the place of the accident, being requested to hurry, as patient appeared to be trying to spring from the crane to the ground. Upon approaching, I saw that R. seemed to be

trying to get out of his stand in order to jump. I immediately ordered one of the men to go up to him. As the man approached, R. seemed to increase his efforts to get away, and it required great effort on the part of the man to fasten R. and himself into a sling by means of which they were both lowered to the ground. Upon being loosened from the sling, R. endeavored to run away. All the time he was trembling violently and sobbing bitterly with tears streaming down his cheeks. Finally with a man on either side of him, he was conducted to a room and laid upon a couch where he remained quietly, breathing heavily and moaning. Occasionally he would break out into fits of violent weeping and muttering of unintelligible words. Patient showed difficulty in walking on account of the severe tremor in the entire body. He lay in this room for about an hour and then was taken to the hospital in an ambulance. He seemed to have no idea of what he was doing and gave the impression of being completely out of his mind."

From the moment of his screaming up to the time his wife visited him in the afternoon, an interval of about 10 hours, patient has absolutely no remembrance of what passed. Then there was a period of an hour, while his wife was with him, in which he conversed with her. He can remember this visit. It is interesting to note that he told his wife at this time of the grewsome picture of the man wedged between his machine and the beam, being constantly before his eyes.

After this interval of apparent lucidity, there is a period of 12 hours of which he has absolutely no remembrance. At the end of this period, he is found to have full control of his faculties, being however very restless and nervous and constantly distressed by the horrible remembrance of what he had seen.

The condition presented by this case is that of a dream state as a result of emotional shock caused by the sudden realization of the patient that an awful injury, perhaps death, had been done to a fellow-being through his own fault.

The possibility of an hysterical dream state can be discarded, because, neither the history given by the patient nor that obtained from his wife point to hysteria. The patient was always noted for his well-balanced and nonexcitable nature. The physical examination shows nothing characteristic of hysteria. There was an exaggerated knee reflex and an excessive sensitiveness to the prick of a needle, but both were bilateral. There was also a general tremor and a marked restlessness, points indicating a markedly disturbed nervous system, all of which, however, can be explained by shock. That the attack has never recurred although he has been considerably worried by the investigations of the police authorities, speaks strongly against hysteria.

Epilepsy presents itself as a possible cause of the dream state but there is nothing upon which to base such a diagnosis in this

case. There is a negative history of epileptic convulsions, the tongue showed no wounds or scars. All investigations concerning petit mal, nocturnal epileptic seizures or attacks of vertigo, etc., showed negative results.

Case II

This case was brought to the psychiatric wards of the Charité Hospital from one of the nearby military hospitals on April 20, 1911, and was accompanied by the following history:

Patient N. was received on the evening of April 17, about 10:00 p. m. Upon his reception, he was in such an excited condition that it was impossible to obtain any information from him. He lay in bed with his limbs drawn together and his body bent forward upon itself. When anyone touched him, all the muscles in the body would contract to their utmost extent. At the same time he would snap with his mouth and endeavor to bite something.

At times, he would grasp the mattress with all his force, and bite into it repeatedly. His face wore an expression of great anxiety and from time to time he would gaze at the wall with his eyes wide open and staring, and, at the same time, would draw his body together with convulsive power. He did not seem to have any idea of being followed, nor any hallucinations. He did not react to being called nor to hearing his name spoken. He would not take any food.

On the afternoon of April 19, towards evening, he became clearer in his mind and took some nourishment. He also urinated in the proper receptacle upon his own initiative.

The next day, April 20, he took more food and continually and monotonously demanded his clothes. He spoke in whispers and rather unintelligibly.

During the afternoon of April 20, patient was transferred to the psychiatric wards of the Charité.

The results of the examination at this institution are as follows:

Patient N. is 22 years of age and unmarried. He is of average height and well proportioned. Physical examination showed symmetrically, slightly increased patellar reflexes, a positive reaction to Rosenbach's test, and a normal field of vision for white. Beyond these points nothing of interest was observed.

Patient responded promptly and satisfactorily to the tests for intelligence.

The following personal history is given by the patient. His childhood was in all respects normal. At school he had learned as easily as the average. Later he learned the trade of bricklayer; and was serving his allotted time as a soldier when the present attack of illness occurred. He has never been ill, nor has he ever suffered from convulsions of any kind.

The patient was perfectly orientated as to time, place and person. He gave the following history of his trouble:

He had asked his military superiors for a leave of absence during the three Easter holidays, but was refused. Although disappointed by this refusal, it did not excite him. Later, he asked for the evening of the second holiday, *i. e.,* Monday, April 17, and was again refused. The ground given for this refusal was that his superior officer wished to punish him, because he had not been to church on Easter Sunday as per general order. The patient claims that he had not been ordered to attend church and so considered the refusal to his request as unjust, and, in consequence, he felt quite irritated and angry. During the day of Monday, April 17, he went into town and drank, between the hours of 3:00 p. m. and 8:30 p. m., *about* 10 glasses of beer and smoked 4–5 cigarettes. He here made the observation, that on previous occasions he had taken as much beer and had not been affected by the same, but on this evening, as he came to barracks, he was somewhat intoxicated. However, he was able to undress himself and go to bed. From this moment until the afternoon of April 19th his memory fails him. He remembers having come to his senses on this afternoon and having learned through inquiries that he was lying in the garrison hospital. He also remembers having subsequently demanded his clothes and being transferred from the infirmary. Since then his memory has been perfectly clear and at the present time, April 20, he feels quite well. He has at no time experienced hallucinations or illusions.

Patient's conduct in the Charité wards was quite correct until May 2. On this day, he went to bed about 8:30 p. m. and immediately fell asleep. According to the night nurse, he slept for about one half hour and then be began to groan and roll from one side of his bed to the other. He would occasionally draw all his limbs up against his body and then suddenly straighten them out with great force. The attending doctor came to him at about 10 p. m. and found patient in this condition. Patient showed no reaction to a loud calling of his name nor to being shaken, nor to deep needle-sticking. When laid upon the edge of the bed, he threw himself to the floor. The pupils reacted to light and the Babinski phenomenon was not present. This condition lasted for about 1½ hours, when patient fell into a deep sleep. Later when awakened by the doctor and questioned, patient denied having experienced anything unusual. For the next few days, his conduct was quite correct. However, the patient complained of being confined in the hospital and demanded repeatedly to be sent back to his company, saying that he could not stand the restraint. On the evening of May 8, patient went to sleep as usual and slept until 12:15 a. m., when he had an attack similar to that of the night of May 2. This experience lasted ¾ of an hour, immediately afterwards he vomited his evening meal, then he went to

sleep, and slept until awakened next morning at 7 a. m. Upon being questioned he remembered the vomiting but nothing else.

Up to the present time June 20, the patient has had three more attacks all of the same hysterical nature. His conduct is orderly, but he seems to feel the hospital restraint and repeatedly asks to be allowed to return to his military duties.

The father of the patient informs us that his son passed quite a normal childhood and was always considered to have a strong, healthy constitution. He was never known to complain of migraine, dizziness or fits of any kind, and had no evil habits such as lying, stealing, etc. On the contrary, the patient was always industrious and had at no time come in conflict with the authorities. He was never known to drink anything but beer and of that only lightly, on an average of not more than 2 glasses a day. As a child, he was rather restless in his sleep and often talked, but was never known to be a sleep-walker.

Case III

Patient C., 22 years of age, unmarried, was transferred by the military authorities to the psychiatric wards of the Charité for observation.

The following history concerning the patient was sent from the military hospital in which he had been treated.

Patient C., who has been in the military service since October, 1910, underwent an operation for appendicitis on November 23, 1910. After convalescence from the operation, he was given light duty. February 22, 1911, patient reported himself to his immediate superior as sick, complaining of pains in the right abdomen. The doctor on duty was summoned and found patient in his bed and rather restless. Patient talked irrationally and paid no attention to questions addressed to him. A hasty examination showed all the reflexes to be symmetrical; the pupils reacted well to light; the abdomen was rather distended and the walls tense; there was dullness over a large area in the lower, central portion; the pulse was regular and strong; temperature per rectum was 37.3° C. Patient was ordered transferred to the military hospital. Here he vented 800 c.c. of urine. The abdomen became relaxed and the dull area considerably decreased. On the next day, February 23, after considerable persuasion, patient passed 150 c.c. of urine. The doctor ordered, in the presence of the patient, a nurse to bring a catheter, saying that it was necessary to empty the bladder. Shortly after the nurse left to bring the catheter, patient passed 1,000 c.c. urine, emptying the bladder completely. On February 25, patient urinated regularly, took part in the work about the wards, and had no more complaints.

March 12, 1911, patient was seen by one of his comrades tak-

ing part in the festivities of a dance hall in the vicinity of the barracks. Patient was seen to leave this place at about 8:30 p. m., returning to the barracks. None of his comrades noticed anything peculiar in his actions. He gave no one the impression that he was drunk or had been drinking. He retired to bed in an orderly manner and went to sleep. About 10:50 p. m. he became restless and, about 11 p. m., his restlessness had so increased and he became so threatening that his room-mates were compelled to hold him forcibly in bed. Patient, however, succeeded in freeing himself and, springing from the bed, ran from the room into the corridor. Here he sprang on to the sill of an open window, but was pulled back by a comrade. He was transferred to the military hospital where, towards morning, he became quiet and rational. He could not remember what had happened during the night and his only complaint was a severe headache. Later he was transferred to the psychiatric wards of the Charité. It was also learned from the military authorities that the patient had, before his entrance into the army (October, 1910) been a frequent visitor at race tracks and had often bet upon the races, but only small sums. Before entering the service, he had given all of his capital, the sum of his earnings for many months, to a friend to bet upon a horse that was to take part in a race in Nice, a city in southern France, toward the latter part of February, 1911. The patient learned early in March, 1911, that this sum of 225 dollars had been lost.

The patient was received in the Charité on April 28, 1911. He is of medium height, strong and well nourished. He is perfectly oriented as to time, place and person. Nothing of interest could be traced in his heredity.

According to his parents, his childhood was quite normal.

He had learned well at school and was always industrious. He had learned the trade of waiter, in which he worked until his entry into the military service in October, 1910.

He denies being a drinker, claiming that he has no taste for alcohol. The physical examination showed a fine static tremor, a light fluttering of the eyelids by the Rosenbach test, a distinct and symmetrical dermography; and pressure points on the right side in the supraorbital region, the mamma, and in the inguinal region, otherwise nothing of interest.

The intelligence tests were made promptly and satisfactorily. The patient gave the following history:

He had been very depressed over the loss of 225 dollars that he had given to a friend to bet on a horse race in Nice. After he had heard of this loss, he took advantage of the first opportunity to go to the city and dissipate. He remembers that this opportunity came on Sunday, March 12. He also remembers that he returned to the barracks about 8 p. m. in a rather drunken condition, and he went immediately to bed. The next that he

remembers is, that he awoke in the military hospital with a very severe headache. He lay in bed on account of this pain in the head for three days. His condition had, in that time, so much improved that he was able to work about the ward until transferred to the Charité. Patient feels perfectly well. Occasionally he has "burning pains" in the head, but these pass quickly. He sleeps well and his appetite is good.

Upon being questioned, patient said that he had heard of his loss during the week and had worried a great deal over it and that Sunday was the first day on which he had enough free time to leave the barracks in order to drown his feeling of worry. Up to the time that he started on his return to the garrison, he had imbibed 8–10 glasses of beer and about 8 glasses of cognac.

May 4, 1911. The night nurse reported the following occurrence.

At about 12:50 a. m. patient came to him and said: "I want permission to leave the hospital." When asked why he wished to go, patient replied: "I must travel to Berlin." The nurse then took him back to his bed. Patient would not lie down but sat up in bed and cried bitterly. In about 10 minutes, patient went to sleep and slept soundly until wakened next morning.

The patient knows nothing of the above. He remembers getting out of bed about 9 p. m. the evening before in order to get water to drink and that he went again to bed. He believes that he slept soundly until morning.

When asked if he had at any time previously suffered such attacks as this or as the one that he experienced in the barracks, he replied that he had not, but that he had experienced an attack of retention of urine previous to the one of February 22. He could give no cause and explained that he had overcome the attack by drinking large quantities of water.

Case IV

Patient K., a soldier, 27 years of age, and unmarried, was sent by the military authorities to the psychiatric wards of the Charité on May 23, 1911, for observation as to his mental condition. The following history of his recent conduct was sent with the patient.

The patient, a member of the Sanitary Corps, refused on what he considered reasonable grounds, to obey the orders of a doctor, his superior. He was reported: and the authorities decided to punish him. On May 22, 1911, when the patient heard that he would probably receive punishment for his misconduct, he was heard to state that he could not stand to be punished and would rather take his life, as he believed himself to have been in the right. That evening he was detected in the act of taking sublimate tablets from the apothecary. On the next morning, May

23, the officer, who went to inform the patient of the sentence passed upon him, found the door to his room locked. Repeated demands that it be opened were ignored. The officers observed through the window, that patient sat with his arms resting on the table and his head buried between his hands. He noticed also that patient was crying and sobbing violently. Finally a soldier, by order, broke through the window and opened the door to the officer. The patient seemed not to notice the occurrence and continued to sit in the presence of the officer (contrary to army discipline) and, instead of answering said officer's questions, continued to sob and cry. On the table near him was found a letter written to his mother bidding her good-bye, intimating that he intended to commit suicide. (In the letter he expressed how keenly he felt the disgrace of his punishment and how sorry he was to bring the disgrace on his old mother.) He was handed over to the guard. To them he said: "All will be ended at 8 p. m. I must not live longer." He would not speak further nor answer any questions. In about three hours he became quieter and seemed clearer. He was told that perhaps the matter could be cleared up by a report from the Charité after proper observation and he consented to be transferred to that institution.

It was also reported that patient had not fulfilled his duties perfectly in the hospital since April 1, 1911, showing a tendency to lack of punctuality. His comrades report that he has always been reticent and rather fond of secluding himself.

The examination in psychiatrical wards in the Charité gave the following:

Patient is strong and well nourished, measuring 5 feet 11 inches in height. Outside of two stigmata *i. e.*, attached ear lobes and two cowlicks on either side of the head forward near the forehead, there was nothing out of the normal found in the physical examination.

The tests of his intelligence were performed promptly and satisfactorily. The patient was perfectly oriented as to time, place and person.

He admitted having often urinated in bed up to his 16th year and could indistinctly remember that he had some sort of convulsions in his 9th or 10th years of life. The mother corroborated this, saying that as a child, he had, to her knowledge, only 2 attacks. She could not say how long they lasted but that the child would begin to cry aloud, and to contract and extend all of the limbs; then he would lose consciousness. In the fits, he bit his tongue and a white foam came from his mouth. Patient is sure that he has had no attack since his 16th year.

He learned easily at school. He was apprenticed to the trade of wood carver but in 1904 became a hospital nurse and entered the army in the Sanitary corps in 1906. He has the grade now of a non-commissioned officer.

Outside of an inflammation of the kidneys for which he lay in a hospital for 3 months in 1905, he has had no serious illnesses.

He denies the use of alcohol to any extent, which statement has been corroborated by his comrades.

No points of interest could be traced in his heredity.

The patient gave the following history. He had been in unfriendly relations with a young physician of the corps and it was because the latter reported the patient's refusal to obey a command given by him that patient was sentenced to be punished with 5 days solitary confinement. Patient was told of this sentence on the morning of May 23, but not officially. He telephoned to his headquarters, asking for details of his sentence, but he was informed that they were not allowed to tell him.

By this time he had become very much excited and decided definitely to commit suicide. He went to his room but cannot say whether he locked his door or not. He does remember that he was very much wrought up and walked to and fro in his room and that he wrote something, whether it was the day's menu or a letter to his mother, he cannot say! He felt a nausea and a dizziness come over him and then he knew no more until he came to himself among the hospital guard, who told him to get up and dress as they were going to take him to the Charité.

He denies having taken any alcohol on this day.

When questioned as to his own ideas as to the cause of this trouble, he answered with tears in his eyes and a show of much feeling that the troubles with his superiors and the probability of punishment had caused him to feel so confused that he felt the only escape was suicide.

May 26. Patient still insists that he does not remember locking his door, neither does he know that his window was broken open, or that he was found crying in his room on the 23d. The first that he remembers, after feeling unwell in his room, was his being told by the guard to dress, as he was to be taken to the Charité.

This group of cases which I have presented is of interest with regard to the development of the dream state.

Dream states, developed upon the basis of hysteria, epilepsy, alcohol or mechanical shock have often been described in the literature. Cases of dream state however, in which the above pathological conditions are only predisposing etiological factors and in which emotional shock is the chief and active cause of the physical disturbance, have not been given sufficient prominence, while the fact that a dream state can develop without any predisposing etiological factors, but only upon the basis of an emotional shock has been, by a great many, denied.

In analyzing the cases in the group under discussion it will be

noticed that we are not able to establish points of interest, as far as heredity was concerned, in any of the four cases.

Case I will be taken up later.

In Case II we have from the beginning indications of a psychopathic constitution as shown by the father's testimony, that, as a boy, the patient was restless at night, and talked a great deal in his sleep.

We also have seen that the patient was not accustomed to much alcohol; and, that, upon the 17th of April, he drank 10 glasses of beer within the short period of 6 hours. According to his own account, he had on a few previous occasions imbibed as much beer, and had not felt any bad effects therefrom. Evidently the combination of a labile psyche and the sudden emotion of angry resentment, aroused by the, to him, unjust ruling of his superior officers, made the unusual alcoholic excess the deciding and compelling factor in forcing the already labile mental condition to one of a definite instability—an emotional dream state upon an hysterical basis.

In Case III, of the three etiological factors involved, *i. e.*, an hysterical constitution, an emotional shock, and an alcoholic excess, it would seem that the latter was the decisive one.

To realize the severity of the emotional shock, we must take into consideration that 225 dollars, in Germany, is a very large sum to the class of people to which the patient belongs and we must remember, also, that this sum represented months of labor and constant saving. The patient expressed the case graphically when he said: "I felt as though my whole past life had, in a single moment, been thrown away." It was in this state of worry and doubt, that patient, already in a labile psychical condition, had been existing for 3–4 days when he came under the effect of a severe alcoholic indulgence, resulting in a sudden dissolution of all psychical restraint. In this case we have a dream state brought about by sudden shock to the emotions and a sudden alcoholic excess in conjunction with an hysterical psychopathic constitution as a predisposing factor.

Case IV presents a different picture. Here neither alcohol nor hysteria can be said to enter into the etiological complex.

The testimony of his comrades that patient had for some time shown a tendency to reticence and a desire to remain apart by himself; the report of his superior officers that, since April 1, 1911, patient had shown less punctuality in his hospital duties;

the fact of his refusal to obey a command of a superior officer, although he knew that it was very liable to result in a blemish on his military reputation; all these, taken in conjunction with the childhood history of epileptic attacks and the stigmata of urinating in his bed until his 16th year, are evidences that the psychical state of the patient was not in a stable condition.

He had lost the normal perspective, did not appreciate that his attitude toward life had changed, but imagined that his superior officers were bent upon persecuting him. When he did suddenly realize that he was actually to be punished and his military record was to be really besmirched, he became, as he himself expressed it: "so confused that I wished to end my life." Such a blemish on a soldier's record is not to be taken lightly; for, quite beside his soldierly pride, a clean record as a non-commissioned officer for a certain number of years, is of great practical value, as such men, after their retirement, are given excellent positions by the government and are otherwise looked after as long as they live.

The fact that he would no longer be looked upon as an ideal soldier, that he had needlessly endangered his chances for future preferment, was a great shock to his psychical condition, already overburdened by serious pathological factors. The result was a sudden psychical collapse.

On the other hand, Case I offers quite a different picture to the foregoing cases. It is characterized by the fact that quite independently of any pathological factor or previous psychical weakness, a severe disturbance of the mental association and the intellect occurs. It is also noteworthy that there is no hereditary taint upon which to fasten the cause of this condition.

A comparison of these cases causes us to consider as unmaintainable the claim which has often been made, that an emotional dream state must *necessarily* be based upon an epileptical or hysterical foundation or occur in conjunction with alcoholic excesses, and, furthermore, supports us in the assertion that true emotional dream states can develop, though very rarely, without the foregoing pathological etiological factors. Similar cases were observed by Stierlin during the earthquake at Messina.

The purely emotional dream states are brought about by various causes.

Those caused by shock form an especial group.

Again, we find instances in the literature of cases in which severe attacks of anger and of intense anxiety have been the sole

cause of typical dream states. As no other etiological factors were present, I would be inclined to class these cases as purely emotional.

In the consideration of the emotional dream states, a most interesting factor is that of the pathogenesis. The importance of the effect of shock in precipitating psychical disturbances is well known.

The intense action of an emotional shock is similar to that of a sudden and severe mechanical shock. Now, a mechanical shock, resulting from a certain force, shows a much more intense action when it occurs suddenly than one from the same force, occurring slowly. We must realize this fact in order to be able to understand the extraordinary discrepancy that is often observed between an emotional shock which can be apparently very slight, and the remarkably severe effects of the same upon the psychical condition. Such results are, in all probability, to be explained by the abruptness with which the emotional shock occurs.

The effect of shock, whether the shock be emotional or mechanical, shows itself according to the location of the point of least resistance in the individual.

We know that occasionally an intense emotion will cause a sudden hemorrhage or thrombus in the brain, and the excellent experimental work of Ernst Weber, as also that of Binet and Courtier, has shown that emotional changes cause corresponding disturbances in the circulation of the brain; also, that the intensity of the circulatory disturbance bears a direct relation to the intensity of the emotional disturbance. Further we know that dream states have occurred as a result of circulatory changes, *i. e.*, in the so-called " Mania transitoria " and " Raptus melancholicus."

In all probability the emotional dream states are brought about by vaso-motor disturbances.

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THREE CASES OF TUMOR OF THE FRONTAL LOBES

With Some Remarks upon the Functions of those Lobes, Chiefly from the Clinical Point of View

By Robert T. Edes, M.D.

READING, MASS.

A case of frontal tumor of my own occcurring about the time I read the report of a recent discussion at a meeting of the American Neurological Association, led me to consider whether this case, with some older ones, did not give as clear a presentation of frontal lobe symptoms as many of those which appear in the now by no means scanty literature growing up around this subject.

I have considered chiefly the psychological side of the question for the reason that the more strictly neurological symptoms, the paralyses, the anesthesias, the reflexes, have brought us much farther on the road to anatomical precision in regional diagnosis, while the study of the psychic changes accompanying, resultant from, or coincident with, lesions of the frontal lobes do not seem to me to have as yet anything like a corresponding value, at least in the early stages when regional diagnosis is of the most importance.

If the great number of cases which have been examined are compared with rigid standards both as to observation during life and careful inspection after death or operation, the number which can be admitted as conclusive will be greatly reduced.

Müller, for instance, has subjected to a very strict, but not unfair criticism, several groups of cases which have been collected by various authors and accepted as establishing well-marked and fairly definite relations between lesions of the frontal lobes and decided change of character.

Müller claims that for the decision of this question only such cases should be considered as those very rare ones in which the most rigid anamnesis proves the complete psychic integrity of the individual, freedom from epilepsy and syphilis, as well as from

any factor capable of producing diffuse affections of the cerebrum; and after the section a careful macroscopic and microscopic examination of the whole cortex proves an accurate limitation of the lesions, and disproves any generalized action as well as any diffuse disease.

Psychologic observation is very far from being an exact science as employed by interested relatives, careless and hurried physicians, or hospital attendants, amused or annoyed as the case may be by the vagaries of their fatiguing charges.

On the other side, even if we leave out the difficulties of fixing precisely the borders of a glioma, or the degenerative changes in the walls of an abscess or of the smaller vessels, it is not always possible to show how far the influence of pressure or of collateral edema may extend. If we add the consideration that a careful microscopic examination of the whole cortex is no trivial matter, it must be acknowledged that if cases where all the conditions cannot be completely filled ought not be admitted as collateral evidence, then a great mass of material must go absolutely to waste so far as this question is concerned.

A great deal of material in the form of single cases and more or less extensive tables, has been assembled, which either in the scattered form or in the mass leaves little doubt that any considerable lesion of the frontal lobes is likely, in more than half the cases, to be accompanied with very decided changes in the disposition, usually of the depressive character, sometimes somnolence, stupor, a close resemblance to general paresis, indecision, lack of initiative and will, bad temper, sometimes malice. It is true that any of these may be met with in other intracranial lesions and even without perceptible lesion at all, but it has been remarked that when dependent upon lesions in other regions of the cerebrum they are the result of hallucinations or paralyses, whereas in frontal lesions it is always otherwise, *i. e.*, there is no connection of this kind.

If however we undertake to go beyond these general and commonplace conditions, we find less ground for the foundation of a theory and especially for that of a general change of character as distinguished from a diminution of intelligence, or for the so-called "Witzelsucht," as distinguished from a general causeless euphoria.

The figures from the two sides of the brain (of course when

the third left frontal, the speech center, is not included) are so nearly alike that there is nothing to be learned by separating them. The cases where the lesion has been almost entirely of the lower or orbital surface are not numerous enough to form a basis of any important generalization, certainly not as to any exclusive function of this region.

C. E. T. Aet 39. Of healthy family. Formerly an athlete. Used to get "headers." Is now a worker in fine work in the Waltham Watch Factory.

He came to Dr. Allen Greenwood in the fall of 1899, complaining of dimness of vision and severe headache. There was then a double optic neuritis.

His fellow workmen noticed that he would suddenly stop work and gaze out into space for five or ten minutes and then start up work again, or that he would sit at the work table all day without doing anything.

He went to Maine on a vacation, "sat round." Vomited once on the way to the boat, not since, not seasick.

More irritable and sensitive lately. Dazed and slow.

When I saw him in the next July he was in nearly the same condition, with severe paroxysmal headaches, occipital and temporal. Places his fingers on mastoids, which are not tender. The ears found normal by Dr. Greenwood.

No localized paralyses. A little twitching of arms, mostly on right but moves both well. Pupils equal and movable, no hemianopia or limitation of field.

Pulse 58. Urine not in excess; at one time copious and light-colored but no albumin.

He entered the M. G. H. a few days later, and there had tonic and clonic spasms of the left side. An operation was proposed but not carried out, which indicated some doubt as to whether the tumor was in the frontal or cerebellar region.

The autopsy was made on July 30, and I abridge the account from the very careful records of the Pathological Laboratory.

Skull of normal thickness. Dura tense, convolutions flattened on both hemispheres. At the base, in the space around the infundibulum there is an accumulation of a translucent gelatinous material in the meshes of the pia-arachnoid. Vessels at base not remarkable. Sinuses free, middle ears normal.

The interior of right frontal lobe occupied by a reddish and yellowish softened substance not distinctly limited anywhere and not coming to the surface in any direction. It extends anteroposteriorly from a point about 2 cm. from the anterior superior extremity of the right frontal lobe to the position of a plane passed transversely and vertically through the corpus callosum

about 1½ cm. from its anterior margin. It presents a marked bulging toward the median line and the left lobe has a corresponding depression.

The anterior horn of the right lateral ventricle is pushed backwards. The anterior portion of the right corpus striatum is distorted and pressed downward and outward.

The new growth is about $5 \times 4 \times 3$ cm.

It is a glioma with extensive necrosis and degeneration.

Case II. Miss S., in the sixties; about three years ago had an accidental fall soon succeeded by another and after a partial recovery a third, after which she never walked. The diagnosis of ununited fracture of the neck of the left femur was confirmed by X-ray and later by the autopsy. She spent almost all her time in bed with but little change of position, except that with assistance she was placed in a wheel chair. She used to suffer from nausea and slight vomiting at times and from headaches which her attendant called very severe, but which either from her patience or my want of sympathy did not seem to me excessively so. They were never narrowly localized.

There were pains in the thorax, sometimes on one side and sometimes on the other; but always much pain and extreme tenderness on movement about the hip joint. There was a history of a neuritis in the left arm, and swelling of the hand. She felt that she was continually growing generally weaker, though without complaining of any place in particular, but almost to the last got up every day and preserved her equilibrium of disposition, intellectual and moral.

She was of an exceedingly calm and equable temperament and although she used at times to say that she was frightfully cross she never gave any evidence of it except her own statement. She bore her disabilities, her lameness and her extreme deafness with a calmness, patience and cheerfulness worthy of emulation by many a more robust person, enjoying everything which her secluded and painful life could offer her in the way of books, letters, and conversation, watching the quiet life from her window, the gardening and distant passing in the day time and the movements of heavenly bodies from her bed at night. In fact she was as far removed either from depression and indifference on the one hand or mere silly good nature on the other as could well be imagined.

On June 22 she complained of severe headache and on the 23d she had some nausea but no vomiting.

At 11.30 there was a sudden attack of trembling of all the limbs and drawing of the face to the right. Consciousness not lost. When I saw her a few minutes later and conversed with her, her consciousness was not lost but she could not for a time speak distinctly. She used both hands naturally but the face was drawn to the right.

About 3 P. M. after a few moments' conversation with her niece, who was writing in the room and who had noticed nothing unusual, the nurse found her in convulsion.

When I saw her a few moments later she was unconscious, the pupils small, the left possibly the larger. The pulse was rapid and small, and she died in a few hours.

At the autopsy the dura was not noticeably adherent, although immediately underneath it was the surface of a tumor occupying the second right frontal convolution, in front of but not noticeably compressing the ascending frontal. It had compressed the first frontal until only a narrow strip was left along the edge of the median sulcus. The third was less, if at all, affected.

The tumor extended downwards, though not enough to have atrophied the orbital convolutions. It was easily enucleated from the surrounding brain substance, nearly round and as large as a medium orange, somewhat nodulated, especially on the lower and outer aspects. Its upper surface and many sections were rough to the touch, feeling like coarse sandpaper. In structure it was a sarcoma enclosing many small nodules of concentric cells and a deposit, presumably of lime salts; a psammo-sarcoma.

It seems probable that the difference in the symptoms in these two cases is referable to a difference in the rapidity of growth, the first having been attended from the beginning to the end with marked symptoms less than a year, while in the second the presence of a tumor was not known until the autopsy, when its clear separation from the surrounding tissues, the pressure without disorganization of surrounding tissues, its tough consistence and the infiltration of lime salts made a much slower growth probable. It is true that headache and nausea had been present at times for some weeks but neither could have been considered characteristic, while the unilateral convulsions came on only a few hours before death.

Case III. A young man fell from a coal staging striking upon the right side of the head and face. Was unconscious for ten minutes. Upon entering the City Hospital, February (?), no fracture of the skull was discovered but the facial bones seemed to be movable, without crepitus. On February 22 he was comfortable but drowsy and apathetic. March 6, discharged relieved.

At home is said to have been sulky and morose instead of cheerful as usual. Vomited a good deal.

Reëntered the hospital March 17 insensible. He had had a "bad spell." His face and hands were congested and cold. His breathing difficult. From this condition he soon recovered and after this time the symptoms were chiefly drowsiness and disinclination to talk. At times there was severe headache, not distinctly localized and there were pains of the left side of the face and left hand. At times the right pupil was dilated and for a few days there was a decided protrusion of the right eyeball and a little

swelling of the lid. The head was turned to the right and any attempt to turn it to the left was attended with pain.

He died April 26.

The autopsy disclosed the frontal lobe of the right side greatly distended and fluctuating. The convolutions were flattened and adherent at one point to the orbital plate of the frontal bone.

An incision showed an abscess with a very well defined capsule holding perhaps 100 c.c. of greenish pus. It extended inward to the wall of, but did not penetrate, the lateral ventricle. It did not involve the great ganglia unless possibly the very anterior border of the nucleus lenticularis. The lower wall was very thin but above and externally to the capsule there was a tolerably thick layer of comparatively normal brain substance. Through the orbital plate of the frontal at the point of adhesion extended a small hole with irregularly tilted edges, apparently a united fracture. The tissues of the orbit showed no traces of inflammation.

In a list of 44 cases which includes some suitable ones from the older tables as well as several not in any of them there are —. Of the right frontal involving not at all or only slightly the left, 17. Of these there are only three in which there was no mental change noted.

Of the left side the figures are 21 and four with no marked mental change.

Where both sides are seriously involved there are six, all with some mental change. In all forty-four with seven mentally unaffected, agreeing closely with several other tables and calling for no further remark.

It seems to me that on trying to go further we find no firm ground, and cannot with any high grade of probability affix any definite lesion or location to any very definite phase of mental change. The only approximate, if vague, generalization makes of the frontal lobe on either side central stations for the coördination of many centripetal currents starting freshly formed from numerous centers and brought in contact with older stored ideas and under the control of the will and attention. Which current of ideas shall be cut off or misdirected or where attention shall fail are questions which clinical observation as yet finds few facts minutely enough specialized to determine. But feebleness of attention, want of appreciation of what is going on within or without together with failure of memory and emotional depression will cover as large a proportion as any other. "Witzelsucht"

either as represented by indifference, lack of appreciation or a malignant sarcasm, a desire to discharge malicious jokes upon friends, figures only very slightly among these cases. "Character, as formed through a man's conscious presentation to himself of objects as his good," is obviously difficult to trace in the ordinary clinical report, or even if we accept as a more practically useful definition "the estimate attached to an individual by the community in which he lives," there may be mistakes, as well as in other cases of psychic diagnosis, possibly not to be always avoided even by the most searching methods.

The resemblances which have been pointed out in a few cases between cerebral tumors and general paresis, and to myxedema are suggestive.

A short parallel between clinical observation and the experiments which have been made upon animals most nearly akin to man is interesting but can hardly be called instructive. It can hardly be so until the anatomy of the brain and the psychology of the quadrumana, not to mention dogs, can be brought more closely into correspondence than at present and the results are as yet not worth the cruelty involved. Bianchi's results from the removal of the frontal lobes in apes seem harmonious not only with each other but with the theory held of these lobes being a chief coördinating center for the activities of the motor and sensitive portions. On the other hand they are denied by other experimenters among his own compatriots, who find nothing recognizable as intellectual changes.

In the celebrated crowbar case (so called) a very large part of the left frontal lobe must have been removed (with some injury to the first convolution on the other side?) and the result has been received as typical of the change of character which is to be expected from such a loss. The patient, a steady going workman and foreman, regarded by his employers as one of their best, liked and respected by the men under him, became after his complete bodily recovery another man, rash, fickle, violent, impatient of advice, devising plans almost at once abandoned, telling big stories and very profane. But he could and did for some time drive a six horse team.

As regards a possible localization in the lower region of the frontal lobes, that is the orbital convolutions, there may be compared with this "crowbar case" with its very extensive lesion of

bone and cortical substance, a change of character which may be taken as almost typical of what should be expected on the basis of the theory which places in orbital convolutions the coördination of the higher range of cerebral functions, that other almost equally celebrated "breech pin" case where there was no corresponding and indeed very little mental change of any kind in an unemotional, rather dull, but not at all defective boy, but where the subsequent operation and autopsy showed the penetration from the orbit of the right frontal lobe by a considerable portion of the heavy iron breech pin of a shot gun which remained there some weeks between the accident and the operation. The much more extensive destruction of the upper portion of the lobe was undoubtedly the result of the difficult and extensive operation for its removal from the cranial and postnasal cavities.

Other less well marked cases, frequently of abscess, or where a tumor was situated below and between both lobes pressing upward and outward differ in no important mental features from the general condition. My Case III is one in point.

Society Proceedings

THE PHILADELPHIA NEUROLOGICAL SOCIETY

January 26, 1912

The President, Dr. Alfred Reginald Allen, in the Chair

Dr. Milton K. Meyers read a paper with the title: "Epilepsy in Adult Life in Association with Thyroid Disease. Report of 6 Cases," and exhibited the patients.

Dr. Alfred Gordon inquired whether the occurrence of epilepsy coincided with the development of the thyroid gland or whether it preceded or followed. He said he had had quite a number of cases of hyperthyroidism, showing symptoms of disturbance of the function of the thyroid gland with enlargement of the gland, and at the present time he has two cases in one of which six members of the family are affected with plain goiters, and in the other case three have exophthalmic goiter and still there is no epilepsy. Dr. Gordon said he would like to know whether the enlargement of the thyroid preceded the epilepsy, so that we could in some way find a relationship between the two, or else that the thyroid gland existed many years and the epilepsy developed later, in which case it would be difficult to connect the two affections as cause and effect.

Dr. Meyers stated that in at least three of the cases the swelling of the thyroid gland preceded the epilepsy; in one of the cases it preceded the epilepsy about twelve years, in another patient about six years; in still another case, three years.

He was unable to say whether it preceded in the exophthalmos case. The mother said the patient always had large eyes. In a case Dr. Meyers had of true exophthalmic goiter to all intents and purposes the attack preceded the development of the exophthalmic goiter. The woman did not know that her neck was enlarged or that she had any of the symptoms of exophthalmic goiter until she came to the dispensary for treatment. She came to the dispensary for treatment of her epilepsy.

A CASE OF JUVENILE TABES

By Alfred Gordon, M.D.

The patient, a girl of 18, began at the age of 12 to have disturbances of the bladder and rectum, consisting of imperative micturition and defecation. Shortly afterwards girdle-pain made its appearance with occasional sharp lancinating pain in the thorax. The condition remained unaltered until she came under Dr. Gordon's observation a few months ago. At present the patient shows the following symptoms; Imperative micturition and defecation with occasional incontinence, shooting pain in the thorax, and a girdle sensation. The knee-jerks are not obtainable except on reinforcement (Jendrassik's method), and then only at times and are very

feeble. The Achilles tendon reflexes are totally abolished even upon reinforcement. Bernacki sign is present on both sides. The pupils are unequal and react sluggishly to light. A Wassermann test made on two occasions proved to be positive.

The interesting feature of the case is the absence of ataxia. It seems that in quite a number of cases of juvenile tabes published this typical manifestation of the classical tabes was absent. In a case exhibited by Dr. Gordon before the Philadelphia Neurological Society October 27, 1903, ataxia was also absent. The absence of ataxia seems to be characteristic of tabes occurring at a youthful age.

Dr. George E. Price said that recently in conjunction with Dr. Shannon, he had reported a case of juvenile tabes before the Ophthalmological Section of the College of Physicians. In that case the reflexes were lost and there was primary double optic atrophy. The patient, a girl, was fourteen years of age, and the condition had been present for two and a half years. She also had sphincter incontinence of the bladder but not of the bowels. In this case, as in Dr. Gordon's, there was no Romberg sign, though the girl had slight incoördination of the upper extremities. The absence of marked ataxia was rather common in cases of juvenile tabes. In the case Dr. Price reported the Wassermann test was positive. A spinal puncture was made and there was found to be an increase of albumin but no lymphocytosis. Dr. Price asked whether in Dr. Gordon's case a spinal puncture had been made.

Dr. John K. Mitchell said that he had had but one case of juvenile tabes under observation, which was interesting because of the curiously different set of symptoms. While the child was ataxic in all four extremities it presented no distinct pain. The symptoms began at four years of age. The eyegrounds were entirely negative. There were no alterations in the eye muscles and the child had but very little Romberg symptom. But there was a marked ataxia beginning to develop at four years, and increasing up to six years, when Dr. Mitchell lost sight of the child.

Dr. Gordon said that Dr. Spiller had just told him that with a bright electric light he found a good reaction of the pupils. Dr. Gordon said he had not tested the girl's eyes with a good electric light but at half past 3 in the afternoon with sunlight at a large window he tested them and the reaction was quite sluggish. He had seen other cases of tabes in which with ordinary light the pupils did not respond so well and did respond with very bright artificial light. In answer to Dr. Price's question there had been no lumbar puncture made. In regard to Dr. Mitchell's case, it was very interesting to know that there are cases such as his. There are other cases published in which ataxia was present, but in a large number of cases of juvenile tabes the ataxia was not present, and all the cases that have been reported are not reported from the standpoint of future development of the disease. We do not know whether later they develop ataxia or not.

Dr. Williams B. Cadwalader reported: (1) Unilateral Fifth Nerve Palsy of Syphilitic Origin. (2) Bilateral Seventh Nerve Palsy of Syphilitic Origin.

Dr. John K. Mitchell said that Dr. Cadwalader and he had some difference of opinion on the subject of the man with bilateral palsy. The attacks of paralysis occurred some 36 or 40 hours apart. It was ten days or two weeks later before he began to have spinal pain. As to the first

pain that he had, he specified particularly that he came from his work in a heated condition after drawing off the air from a refrigerating plant. Instantly that he went into the cold outside he felt severe pain in the back of his head. This pain continued until two weeks afterward he began to have spinal pain. The reason Dr. Mitchell and Dr. Cadwalader had a difference of opinion was that Dr. Mitchell's opinion was that the man's paralysis was entirely refrigerant in origin. The fact that he had a day and a half between the attacks shows that it developed a little more slowly on one side than the other. Dr. Mitchell said another reason he thought this the cause was that the paralysis had almost entirely disappeared before the man received any salvarsan or had specific treatment very much pushed. He recovered by treatment with electricity and massage of his face, and began to get better before salvarsan was given, and long before any mercury was given. The recovery was almost complete. He has a slight difficulty in speech, he can't purse his lips up, and he can't completely close his eyes. At first he could hardly speak in a comprehensible manner. There can be no question of the syphilitic origin of the spinal attack.

Dr. William G. Spiller said he had seen paralysis of the fifth nerve and bilateral paralysis of the seventh nerve in different patients, clearly of syphilitic origin. The case with fifth nerve palsy was with necropsy and had been reported by him with Dr. Camp.

Dr. D. J. McCarthy said he had a case, with autopsy, in which there was a bilateral facial palsy in a man persisting to his death. He did not recall how soon the involvement of one side of the face followed the other. There were a series of accidents of spinal origin. It was a case of very intense cerebro-spinal syphilis. As he remembered, there was a third nerve palsy on one side, with an involvement of the fifth nerve. There was an extraordinary condition of the Babinski. By irritating the sole of the foot or any portion of the body it could be obtained. A sudden jerk of the hair would cause a Babinski reflex on the side irritated. Gross examination showed a fibrous gumma on the cortex and diffuse basal meningitis.

Dr. Cadwalader said that he did not think that syphilis should be ruled out as the cause of double facial paralysis, even though a history of apparent refrigeration had been obtained, for at the time of onset there had also been unmistakable signs of an acute exacerbation of an old syphilis, *i. e.*, severe root pain, hypalgesia about the thorax, loss of knee jerks, and positive Wassermann reaction. However, it is not impossible that the presence of syphilis might facilitate refrigeration.

Dr. Alfred Reginald Allen delivered the presidential address on "Recent Views on Hysteria."

NEW YORK NEUROLOGICAL SOCIETY

February 6, 1912

The President, Dr. L. Pierce Clark, in the Chair

NEUROLOGY AND THE PUBLIC WELFARE

Dr. Charles L. Dana made some introductory remarks on this subject, in which he briefly referred to the relation of neurology to occupation neuroses and industrial diseases in general. He also referred to the

neuroses in relation to insurance and employers' liability laws, to the classification and care of retarded children, and to medical expert testimony.

Dr. Edward D. Fisher, after referring to the position occupied by the neurologist to-day as compared with that of a quarter of a century ago, said that when he entered the medical profession he shared the opinion then in vogue, and looked at neurologists askance. About that time our ignorance in regard to nervous diseases began to be dispelled, especially that pertaining to their anatomy and pathology. With this, a more accurate diagnosis became possible, and to-day the study of neurology rested on a firm scientific basis and compared favorably with that of other branches of medicine.

More recently, the psychological side of neurology had assumed a prominent position, and it was now undergoing a stage of transition, not unlike that through which we passed 25 years ago, before the anatomy and pathology of nervous diseases was so well established. In the course of time we would evolve from this uncertain period a practical form of psychotherapy.

Referring to the relation of neurology to occupation neuroses, Dr. Fisher said he thought the time had come for the neurologist to take a deeper interest in general medicine, rather than to regard his work as a too distinct specialty, as he had done in the past.

SOCIAL SERVICE WORK IN RELATION TO NEUROLOGICAL PRACTICE

By James J. Putnam, M.D., of Boston

In his address on this subject, the speaker said that the social service movement was one about which it was justifiable to feel enthusiastic, so considerable were its accomplishments and its promise. He had understood that since 1905, when the work was first started at the Massachusetts General Hospital by Dr. R. C. Cabot, it had been taken up so widely that more than fifty hospitals or dispensaries in different parts of the country had instituted this method of treatment. It might, of course, be difficult to obtain funds for carrying on such an enterprise, but where funds were obtainable, workers could generally be had. It should be distinctly understood that only persons who had been thoroughly trained in some charity organization society, or some school for social work were likely to succeed in the best manner. A nurse's training was of service, but not indispensable.

The neurological portion of this work at the Massachusetts General Hospital was begun in 1907–1908. Since then there had been two regular workers, one of them receiving a salary of $1,000 and the other $750 per annum. Within the past year this force had been increased by the addition of a highly trained psychologist, who was conducting psycho-analytic investigations with good results. Patients who were treated in this department were exclusively those who came to the Massachusetts General Hospital Out-Patient Department for diagnosis and advice, and who were seen by the regular staff of neurologists.[1]

[1] It should be understood that the neurological work of the Social Service Department represented only one part of the entire social service work. The patients were referred to the social service workers from all the medical and surgical departments.

Lately, arrangements had been made to aid the Juvenile Court with diagnosis and advice as to treatment, but as yet this had been done only in a few cases. The neurological social service work had been increased about three-fold since the first year of its foundation. It would be impossible, however, to quote any figures indicating the number of patients, or give an adequate idea of the real value of the work, which would have to be measured in terms rather of intensiveness than of extension. A psycho-analytic patient must be helped, if at all, at the cost of a great deal of patient labor.

Four years ago a plan was started whereby a limited number of women out-patients were to be taught clay-modelling as a means of arousing their interest in subjects outside of the drudgery of their daily lives, and increasing their social consciousness by bringing them together in a pleasant way. Through small funds provided by private subscription and the liberality of the Hospital in furnishing a room for this purpose, it was made possible to offer to give lessons each week to a class of between twelve and twenty women and girls. The success of this scheme had exceeded their expectations. A considerable proportion of the original members of this class had continued to attend these lessons ever since, and through the kindness of friends it had been possible to take them to the Art Museum and also on excursions to the country, and to arouse a distinct *esprit de corps*. It was suggested a year ago by one of the surgeons of the orthopedic ward of the Hospital that it would be very pleasant to have the work introduced there. This branch of the work was started last spring, and taken up again this autumn. In both cases the teacher had been one of the workers of the class, who had in this manner shown her appreciation of what she had gained by extending its usefulness still further.

It was proper, Dr. Putnam said, that some statement should be made as to the relation of this social service work to the Hospital itself. The relation had always been very close, but not an organic one. The Social Service Department was managed by a board of men and women, four of whom were physicians attached to the Hospital, and another was the superintendent of the Hospital, *ex officio*. The expenses of the department were met by private contributions, and it was hoped that it would be in their power to make the utility of the work so evident that the public would make it possible to carry it on indefinitely.

Dr. Putnam said the social service work in Boston was by no means confined exclusively to the Massachusetts General Hospital. Excellent work had been done at the Boston Dispensary, at the Massachusetts Eye and Ear Infirmary, and to some extent in other similar institutions.

Dr. Charles L. Dana said there was a considerable amount of social service work being done in New York city, some of it in connection with neurological cases. Last year a trained social worker was sent out from the Cornell Dispensary, but for some reason the experiment did not prove successful, in part because the patients whom she saw seemed to resent the visits. The social service workers who were sent from Bellevue Hospital in connection with cases of tuberculosis usually took something with them for the patients to eat or wear, and were apparently welcome. Aside from this, however, all the workers, he was informed, had been kindly received. Dr. Dana said he did not see why the work could not be extended to patients suffering from nervous diseases, providing sufficient patience and tact were shown.

SOME PRACTICAL LESSONS FOR NEUROLOGISTS DRAWN FROM RECENT EUGENIC STUDIES

By Charles B. Davenport, M.D.,

Of the Carnegie Institution, Station for Experimental Evolution, at Cold Spring Harbor, N. Y.

The speaker made some remarks upon this subject. He stated that by the new methods of analyzing the inheritance of characteristics, it now appeared clear that mental defect and disease were in the vast majority of cases due to the inheritance of distinct defects in the germ plasm. Even when these defects did not appear in either of the parents or other known relatives they might nevertheless have a true inheritable basis. The development of the defect took its predestined way, little influenced by environmental conditions. Because little modification could be wrought on the soma, the more pains should be taken that the germ plasmic defects be not perpetuated. By proper matings, the germ plasmic defects might not appear in the children, but unless matings were carefully controlled, the defects were bound to reappear. Under certain conditions, all too frequently realized, neuropathological varieties of the human race were formed.

Dr. Henry A. Cotton, of Trenton, New Jersey, said he would limit his remarks to this work in its relation to insane hospitals. Insanity was a very complex subject, even more so than feeblemindedness and epilepsy and in addition to the inheritance of defects in the germ plasm, there were other etiologic factors to be considered. The speaker said that at the hospital in Trenton with which he was connected they had two trained field workers, who combined the study of the inheritance of the patients with an investigation of the family characteristics, habits, environment, etc. Further than this, they concerned themselves with the after-care of the patients. Discharged patients were visited by the field workers at regular intervals, a report of their condition was made at the hospital, and suitable advice given, if necessary. This phase of their work was apparently of distinct value in the prevention of recurrences.

Dr. Cotton said that the law passed last year by the legislature of the State of New Jersey, providing for the sterilization of certain classes of insane and mentally defective patients, while perhaps imperfect, was the best, in his opinion, that had thus far been enacted, and it was through the reports of the field workers that we would be able to convince the people and the law-makers of other states of the wisdom of placing such laws upon the statute books.

Dr. Smith Ely Jelliffe said that the remarks made by Dr. Davenport had served to emphasize, in his mind at least, that the study of eugenics was about to enter a new era. We had passed the purely anecdotal phase of the teachings concerning heredity as summarized in the work of Aristotle and the older nature philosophers. The more recent work of Galton, of Pierson, of Diem, of Koller, represent to his mind the period of indiscriminate fact-gathering, a period marked by great industry, but little discrimination; a period in which things which were in reality quite dissimilar were grouped together under diagnostic symbols bearing the same name. Thus, the workers in this period discussed alcoholism, feeblemindedness, epilepsy and insanity all as units, as individual conditions which from the standpoint of nosology were regarded as settled

entities. This, however, is not the case. Behind the symbols of alcoholism, feeblemindedness, epilepsy, etc., rest the individuals who are suffering from various and divers disease processes; disease processes which in themselves have little in common, and yet superficially presenting groups of symptoms which for purposes of convenience, and ofttimes conditioned by intellectual laziness, are classed under the symbol groupings already outlined.

It had been necessary to do this work in order to clear up the brushwood, to evolve methods, but the time has now come when eugenic studies must be more precise and more definite; when group concepts, such as *insanity*, *criminality*, etc., shall be relegated where they belong, not as representing disease entities at all, but crude social states.

So far as the psychoses are concerned the further utilization of such a concept as "insanity" will retard rather than further the progress of the understanding of the eugenic problem. What is needed now is close intensive work among definite disease processes, not an analysis of all sorts of things because they happen to be grouped together under one name. Dr. Jelliffe asked Dr. Davenport to say something about Huntington's chorea in its hereditary relationships.

Dr. Stewart Paton, of Princeton University, said it was really very comforting to think that the medical profession was after all coming into its own. The true work of the physician was that of an educator, and the members of the medical profession were beginning to realize that more and more. A review of university records, shows there is little to suggest that the organ to be trained is the brain, and the time is now ripe for the medical profession to take up the study of eugenics in connection with the solution of educational problems. When a boy was sent to the university, would it not be a good idea for his physician to send to the college authorities a summary of his mental make-up? With these facts before them, and with a knowledge of his mental and physical limitations, the members of the faculty would be in a better position to direct intelligently the boy's activities, and thus prevent many disasters. Any intelligent physician, without asking many questions, could furnish the university authorities with very valuable records, which could perhaps be reviewed in later years and furnish material that would be of great value in the solution of both educational and eugenic problems.

In regard to the scientific knowledge related to the mechanism of heredity, Dr. Paton said that for many years we had associated certain definite, specific properties with the nervous system, which as a matter of fact it did not possess. Its only specific properties were those that had to do with protoplasm in general. We were not in a position to say that here one function began and there another ended. The nervous system, instead of being of primary importance, was after all of secondary importance, and we are driven back to the consideration of the fundamental problems of protoplasm. The nervous system controlled but did not inaugurate function. In order to understand the mechanism of heredity we must know more about protoplasm.

Dr. A. J. Rosanoff, of King's Park, N. Y., said Dr. Davenport has pointed out the fact that under certain conditions of mating imbecile, epileptic, or insane subjects may have normal offspring. This is a fact that has been repeatedly observed, but in this connection it would perhaps be advisable to bear in mind the point that the neuropathic taint is in this way not extinguished nor even reduced in amount, but that its manifesta-

tion is merely postponed to a later generation, and that by such matings the strictly sound part of the race is infected with the neuropathic taint.

Reference has been made not only by Dr. Davenport but also by Dr. Jelliffe to external causes which should be taken into account as well as the original endowment. Our experience, gained in the study of heredity in insanity, has shown us that after excluding those forms of insanity in which exogenous factors are known to play an *essential* rôle no further account need be taken of the external causes, excepting where we may be interested in the individual features of a case, such as special content of delusional system, particular hallucinations, etc. Our experience has led us to regard these individual features as a confusing element when our attempt is to study the various types of the neuropathic constitution rather than its infinite individual modes of reaction under the influence of an infinite variety of combinations of environmental factors. It may be added here that practical problems in eugenics are dependent for their solution, directly or indirectly, upon our ability to define exactly the neuropathic constitution.

As is well known, attempts have been made to describe the various types of abnormal make-up which constitute the characteristic soil upon which dementia præcox, manic-depressive insanity, and other psychoses develop, and these descriptions are no doubt helpful. But the need is obviously for more than that, the need is for exact measurements and the definition of the neuropathic constitution in such terms which would enable the physician to diagnose it with sufficient certainty for practical guidance.

Dr. Davenport, speaking from the standpoint of a biologist, referred to the neuropathic constitution as a group of features which is characteristic of a special variety of our species; this is for us physicians an important point, for it carries a hint that we may learn to identify this variety and to distinguish it by biological methods from conditions that are normal but present fluctuations from the average. Perhaps it would be profitable for us to learn from De Vries the methods which he employs to distinguish from one another the varieties of plants with which he works. He teaches that attempts to draw a line of distinction between two varieties on the basis of but one character, say for instance size of fruit, almost always leads to confusion owing to overlapping of varieties due to mere fluctuations from averages occurring on a nutritional basis. In order to make correct differentiation as many characters as possible must be taken into consideration.

It had occurred to him that in connection with Dr. Davenport's paper the members of this society may be interested in some measurements which have been undertaken at the King's Park State Hospital with a view to arriving ultimately at a more satisfactory definition of the neuropathic constitution. The collection of material is but just begun and Dr. Rosanof presented the meager results merely for the purpose of illustrating the method. In the table are shown, on the one hand, a comparison of brain weights of women having dementia præcox with those of normal women, and on the other hand a comparison of results obtained by the application of the Binet-Simon measuring scale of intelligence to subjects having dementia præcox and to normal subjects. In both sets of measurements, as will be observed, there is very considerable overlapping; but a study of individual cases shows that measurements of two characters are much more helpful than of one. The plain indication, in

other works, seems to be to make in a large number of cases every possible physical and mental measurement directly or indirectly pertaining to neuropathic characteristics, and to establish standards for comparison by similar measurements made upon normal subjects.

		Lowest Extreme.	Average.	Highest Extreme.
Brain weights (in grammes).	Dementia præcox (women)	945	1,140	1,350
	Normal subjects (women)	1,100	1,260	1,460
Intelligence according to Binet-Simon Scale (in age levels).	Dementia præcox.	8 yrs.	10 yrs.+	13 yrs.+
	Normal subjects.	10 yrs.–	12 yrs.+	13 yrs.+

Dr. Davenport, in closing the discussion, in connection with the remarks made by Dr. Paton, said that several years ago Dr. Frank Parsons wrote a book called "Choosing a Vocation," and gave a list of occupations, so that candidates could select the one for which the traits they possessed rendered them most suitable. Since then a similar plan had been adopted by some commercial correspondence school.

As to Huntington's chorea Dr. Davenport said that largely owing to Dr. Jelliffe's interest in the subject they had taken up the matter, and had an investigation made by several field workers. This peculiar disorder, it seemed, was largely due to the fact that these individuals had a positive something or other in their make-up which the ordinary individual lacked—a sort of extra wheel, and that one of their two parents must have had the disease in order to transmit it. The trail of the disease led to many families, but could be focussed to a few central points where it was first brought to this country by the early settlers.

In reply to Dr. Rosanoff, the speaker said that feeble-minded persons might marry and beget normal children. Of course, these children, while normal in appearance, did not possess entirely normal germ cells, but the same applied to at least one third of the human race, and it would hardly do to deny marriage to a person because he carried abnormal germ cells. The entire question of denying marriage to certain persons was a very complicated one, and Dr. Davenport said that while he did not favor intermarriage between neuropaths, he simply wished to point out that a neuropath did not necessarily beget neuropathic offspring.

Translations

DREAMS AND MYTHS. A STUDY IN RACE PSYCHOLOGY

By Dr. Carl Abraham

of Berlin

Translated by Dr. William A. White

superintendent of the government hospital for the insane, Washington, D. C.

(*Continued from p. 350*)

The Œdipus tragedy can affect us today as deeply as at the time of Sophocles, although we do not share the views of gods and fate, and the belief in sayings of the oracle. Freud concludes from this correctly that the fable must contain something that calls out in us all related feelings. "For us all, perhaps, was it decreed, to direct the first sexual feeling to the mother, the first hate and violent wish against the father; our dreams convict us of that." In the Œdipus tragedy we see our childhood wish fulfilled, while we ourselves have recovered from the sexual attraction of the mother and the aversion against the father in the course of our development through feelings of love and piety.

As Freud remarks, the tragedy points to the typical dream in which the dreamer is sexually united with the mother. This point is the purport of the following:

"For many men also saw themselves in dreams, already united with their mother."

The tragedy contains the realization of two intimate childhood dream phantasies: The phantasy of the death of the father and of the love relationship with the mother. The results of their realization are represented to us in all their terribleness.

The same conflict between father and son is represented in the myth of Uranus and the Titans. Uranus seeks to remove his sons, as he fears their encroachment on his power. His son Cronus took revenge by castrating his father. This particular

type of revenge points to the sexual side of their rivalry. Then Cronus seeks to secure himself in the same manner against his children: He swallowed them all except the youngest son Zeus. This one took revenge on him, compelled him to disgorge the other children and then banished all the other Titans in Tartarus; according to another version Zeus also castrated his father.

III

Symbolism in Speech, in Dreams and in Other Phantasies

Both the tales of Œdipus and of Uranus and their descendants have not only a related content, but show also in their outer form an important agreement. In both there is lacking, almost altogether, the symbolic clothing. We learn the whole story from naked words. It is worthy of note that this is also true of the typical dream, which we have drawn upon for the explanation of these myths. Here also—as Freud remarks—the symbolic clothing is found in strikingly slight development.

In general, in the interpretation of dreams, we always run across anew the effects of a psychic determinant which Freud has called the "censor." This will occupy our attention later; here we will only briefly characterize its most important features. The censor will not permit our secret wishes to show themselves in our dreams in their true, undisguised form, but forces an obscuring of the true tendency of the dream through the "dream distortion." The evasion of the censor is accomplished by a very extensive "dream work." We will consider its manifestations more in detail later. Only one form of dream distortion—the symbolic clothing of the wish—must we busy ourselves with now. The above discussed dream of the death of the father and sexual relations with the mother is a striking exception, in so far as here the wish, which appears to us in the waking state as abhorrent, is represented quite openly, without symbolic clothing, as fulfilled. Freud explains this by two factors. We do not believe ourselves further from any wish than from this one; the censor is not occupied with such monstrosities. Secondly, the wish may very easily be concealed behind actual apprehension for the life of the beloved person. Now it is of the greatest interest that the Œdipus saga and the saga of Cronus and Zeus are also very poor in symbolic means of expression. Every man believes him-

self in his waking consciousness infinitely removed from the horrors of Œdipus or of Cronus in his relations to his children and to his father.

We state provisionally that noteworthy analogies exist between certain myths and certain dreams. It will be necessary to inquire further whether these analogies have a general significance. The analysis of most myths—as of most dreams—is rendered difficult by the symbolic clothing of their true content. Because in the Œdipus saga, as in the typical dreams of like content, this complication does not exist, they serve us especially well as an introduction to these interesting problems.

The majority of myths are presented in a symbolic manner and so in reality they must contain something or mean something that their outer form does not signify. They require, like the dream, to be interpreted. As an example of a symbolic myth the Prometheus saga will serve us. We will subject this to a method of interpretation similar to that of dream analysis. The further issue of the comparison of dreams and myths we shall continue by the use of this example.

I know upon what contradictions I will strike if I aspire to an interpretation of myths after the model of dream interpretation, and if I maintain that here as well as there the same symbolism governs. It is Freud's great service to have fathomed this symbolism. Thanks to this study we have learned to know the important relations between these repeatedly mentioned psychic structures. The value of this knowledge, which was attained by the most painstaking studies, is absolutely and often passionately disputed by the critic. By the opponents of Freud's teachings the interpretation of symbols is rejected as phantastic and arbitrary. Freud and his followers are laboring under the power of autosuggestion which makes them explain everything in accordance with their preconceived ideas. They arouse the dislike of their critics by conceiving the symbolism of dreams and related states as expressions of sexual ideas. None of Freud's teachings, differing as they do so much from those commonly held, are attacked with such violence as the interpretation of symbolism. This is of the greatest significance for our further progress. Therefore, before I enter upon the exposition of the symbolism of any one myth, I will lay the broadest possible foundations for this part of my studies. To this end I will call attention to the

fact that the symbolisms investigated by Freud lie deep in every man and have existed at all times in mankind. Therefore it comes to pass that preponderantly the expression of sexual phantasies are brought about by sexual symbolism. My following deductions rest in part upon the valuable writings of Kleinpaul.[9] This author has also seen the necessity of taking a stand against moralizing critics. I will cite a remark of Kleinpaul's[10] to the point: "We must point out the fact that such (*i. e.*, sexual) phantasies do not belong only to patriarchal times, where they were natural, but have continued up to the present time, where they are branded as corrupt." Sexual symbolism, I assert, is a psychological phenomenon of mankind in all places and times. In the beginnings of our culture it was most clearly in evidence, and in a less crass but always clearer form it has asserted itself in the psychic life of mankind up to the present day. Kleinpaul says very aptly, "Man sexualizes everything."

If we first glance at the beginning of the plastic arts, we find representations of the human sexual parts in endless profusion, sometimes hidden, sometimes with a clearness that permits of no doubt. Sometimes their forms are used as decorative ornaments, sometimes vases, pitchers, and other utensils of the most different kinds have the form of the genitals. In the art products of the most different peoples we find objects, which according to the type, have borrowed their form and also bear the name. Egyptian, Greek, Etruscan and Roman vessels and utensils are convincing signs of this sexual symbolism existing at all times in the folks. If we consider the art work and utensils of peoples poor in culture we make the same observation—otherwise we must intentionally close our eyes. The literature of art is another wide and fruitful territory for work, for observations of this kind are widely scattered in the literature.

A perhaps greater significance is assumed by sexual symbolism in the religious cults of all peoples. Numerous practices show sexual symbolism. The cult, extensive in many peoples, of fruitfullness gives occasion for the most wanton symbolism which in no wise simply expresses itself in the grossly unequivocal (phallus, etc.).

We do not need at all, however, to seek so far from the daily

[9] Kleinpaul, "Leben der Sprache," Bd. 1; "Die Rätsel der Sprache," Bd. 2; "Sprache ohne Worte," Bd. 3; "Das Stromgebiet der Sprache."
[10] "Sprache ohne Worte," Leipzig, 1890, Seite 490.

walks of life. Our speech itself is the best sign for the significance which the sexual has had in the thoughts of mankind at all times. All indogermanic and Semitic languages possess (or did possess in earlier times) gender. That is a fact that is commonly little regarded. However let us ask ourselves: Why have the words in our language masculine and feminine gender? Why does language attribute to lifeless objects one or the other sex? A part of the indogermanic languages have even a third gender; in which are included those words which find no place in the two other categories, either because phantasy seeks in vain a sexual analogy or because on some special ground sexual neutrality is to be emphasized. Indeed the reason why an object has the one and not the other sex is in no way always easy to discover. It is also to be remembered that many substantives not seldom have different genders in two nearly related languages. It would lead much too far if we were to go into this highly interesting problem of philology. We shall only refer here to certain rules, especially of the German language. In the German language all diminutives belong to the neuter gender. The folk phantasy compares them to undeveloped, not full grown persons. Of small children we say by preference "it" and treat them as neuters; in many places grown girls are spoken of still as "it" so long only as they are not married. Maiden (Mädchen) and Miss (Fräulein) are diminutive and therefore neuter until they marry. Animals have many quite different names according as to whether they are male or female. Other animals, however, are considered under one of the three grammatical sexes whether feminine or masculine. In certain cases the cause is apparent. Of the animals, those are masculine in which one finds the characteristics which belong to the man, as especially bodily strength, courage, etc. Therefore the great beasts and birds of prey are masculine. Cat (Die Katze) we generally use as feminine; her submissive nature, her grace and adroitness remind one of feminine characteristics. These examples are sufficient.

That also lifeless things are sexualized in speech is a still more noteworthy fact. There are objects, which, in the different languages, are regularly or preferably given a certain sex. Here is presented some of the familiar sexual symbolisms of different peoples. The ship, in German, bears by preference the feminine gender. Also the name given to the ship is usually feminine, even

though it is otherwise masculine. So in the English language, which only shows the rudiments of a sexual differentiation, the ship is feminine; but the battleship is compared to the fighting man and called "man-of-war." It is significant for this conception that we find on the keel of many ships a female figure as an ornament. "In seamen's eyes the ship not simply has shoulders and a stern, it is comparable to the ark, that conceals the germ of life, to the mystic casket that was borne by the women at the feasts of Demeter and Dionysus. It is like the mate of the Indian god Siva, it moves on the sea with the mast as with a phallus" (Kleinpaul). I would like to mention here still another idea. The sailor lives, often for a long time, separated from his wife while he is bound to his ship. He lives with his ship as the landsman lives with his wife and family. So the ship becomes figuratively the sailor's wife.

The pupil of the human eye, which appears as a round, black spot is sexualized in the same way in the most different languages. "Pupilla" in Latin signifies a maiden; the Greek κόρη, the Spanish niña, the Sanskrit Kauna, have all the same sense. The Hebrew has two expressions, one signifies maiden (Mädchen), the other little man (Männlein). The little reflection that one sees of himself in the pupil of another, according to the view of most investigators, gives the occasion for this naming. Kleinpaul protests against this poetic explanation and offers a more naturalistic one. The round spot in the middle of the iris is compared by a naive phantasy with a hole and is treated as a gross symbol for the female sex, quite as happens, for example, with the ear. Whichever explanation may be correct—the fact remains of the sexualizing of wholly asexual objects.

In certain German dialects hooks and eyes indicate masculine and feminine. Expressions like mother, matrix, punch exist in the most various trades; there is always expressed a cavity and a pin which fits in it. In Italian there are masculine and feminine keys according as they have solid or hollow ends to oppose to the lock.

We speak of cities, yes of whole countries as female. Nearly all trees are, for us, feminine; manifestly the bearing of fruit is the tertium comparationis. In Latin the femininity of trees is a strongly supported rule ("Die Weiber, Bäume, Städte, Land," etc.).

I confine myself to a few pregnant examples. If one dips a little into the study of his own tongue he everywhere runs across this sexual symbolism. Kleinpaul's "Das Stromgebiet der Sprache" offers rich material in this respect.

Human fancy imputes sex also to lifeless objects. This shows the powerful significance of the sexual in human phantasy. It follows further, that man in no way stands to lifeless objects in a clearly objective but in a distinctly subjective relation, which springs from his sexuality. It lies deep in the nature of man that he should attribute life to the things that surround him: the child scolds and strikes the table on which he has struck himself. Man does not confine himself however to attributing life to things but he sexualizes them also. And so we come to an understanding of the view of Kleinpaul above, that man sexualizes everything. It is noteworthy that investigations in language and biologico-medical investigations lead in this particular to the same results.

As Freud[11] has shown, the sexual impulse of man in its early stages is auto-erotic, that is, man does not yet know any object outside of himself on which he is able to concentrate his libido. At first the libido gradually turns to other objects, at this time, however, not only human and living, but also lifeless. It will be the object of another publication to deal with this radiation of the sexuality, especially of the abnormalities in this territory, which for the comprehension of certain mental disorders are of very broad significance.

We have established, that all mankind from the beginning, has given great weight to the sexual differences. Human sexuality displays a need of expansion far beyond the object of sexual satisfaction. Man permeates and impresses everything in his environment with his sexuality and language is the witness of his, at all times, creative sexual phantasy. Such facts appear notably opposed to the reproach that Freud and his followers overestimate the rôle of the sexuality in the normal and pathological mental life. The danger of underestimating appears to me to lie much nearer. An often heard objection to Freud runs further, that the impulse of self-preservation governs human life to a much greater extent than the sexual impulse; the prominent position of the latter is therefore an exaggeration. The aim of

[11] See "Drei Abhandlungen zur Sexualtheorie." English translation No. 7, of Nervous and Mental Disease Monograph Series.

the investigation inaugurated by Freud is in finding in everything a sexual meaning. In consciousness certainly the impulse of self-preservation with its radiations may often enough have precedence. The opponents of Freud, however, commit the error that only conscious processes are referred to. Freud has never maintained that the conscious sexual ideas have, among all the others, unconditioned superiority. It is precisely the unconscious, repressed ideas which influence phantasy in the strongest manner.

All objections brought against Freud's sexual theory melt away into nothing if we only consider our mother tongue. Language springs, as nothing else does, from the innermost being of a people. Out of it speaks the phantasy of a people; it expresses itself in a thousand symbols and analogies of which we ourselves are hardly conscious anymore. We do not speak a sentence in which a symbolic expression does not occur. This symbolism is, however, in an important and weighty part, of a sexual character. I return once more to the fact that there are in our language masculine, feminine, and sexless (neuter) words. If the opponents of Freud are right, that is if in reality the impulse of self-preservation and not the sex impulse plays the predominant rôle in the mental life of man, it must be very surprising that the language is divided according to sexual viewpoints! Why does not language rather discriminate things according as to whether they are favorable or not to our impulse to self-preservation? Why not differentiate instead of masculine, feminine, and sexless things perhaps edible, potable, and as a third category, inedible things? There are a number of objects and activities which since the earliest times have served as sexual symbols. We find them with this meaning in the Bible, the Vedas, in the Greek and in the Norse myths, in the poetry of the pre-historic times, in dreams and so forth, again and again. Here belongs, for example, the serpent as a symbol of the male member. In Genesis it is the seducer of Eve. In the German and Norse legends we again find the serpent with the same significance.[12] The serpent plays an important rôle in the dreams of women; the significance of the symbol seems to be evident.

[12] Riklin, "Psychologie und Sexualsymbolik der Märchen."

(*To be Continued.*)

Periscope

Revue de Psychiatrie et de Psychologie Expérimentale

(March, 1911)

1. A Case of Chronic Psychosis Founded on Interpretation with Delirium of Imagination and Revindicatory Reactions. FORTUNÉ and HANNARD.
2. Stereotypy and Collectionism in an Undemented Catatonic Deliriant. BOIDARD.

1. *Case of Chronic Psychosis of Interpretation.*—This is a very detailed report of a case of the delirium of interpretation of Sérieux and Capgras.

2. *Stereotypy and Collectionism.*—The record of a patient over sixty years of age who was first committed to an asylum in 1897 and although a chronic case of long duration with marked stereotypies is not demented. The collectionism, collecting all sorts of useless things, papers, journals, boxes, toilet articles, etc., the author regards as an expression of stereotypy.

(April, 1911)

1. The Idea of Degeneration in the Work of Morel. GENIT-PERRIN.
2. Confusional Melancholia (Tuberculosis) with Anxiety and Ideas of Negation. Disappearance of the Delirious Ideas Contemporaneous with the Cure of the Tuberculosis. HENRI DAMAYE.

1. *Idea of Degeneration in Morel.*—A critical examination of Morel's work with numerous quotations therefrom. The article does not admit of abstracting. The author regards Morel's work as never having been surpassed and as having rescued psychiatry from metaphysics.

2. *Confusional Melancholia.*—The pith of this article is contained in the title.

(May, 1911)

1. Note on the Special Application of the Law of 1838. J. CAPGRAS.
2. Erections as Epileptic Equivalents. M. DUCOSTÉ.
3. Means of Constraint Employed for the Insane in Morocco. SÉRIEUX and LWOFF.
4. Experimental Contribution to the Physiology of Sleep. R. LEGENDRE and H. PIÉRON.

1. *Law of 1838.*—An article of local interest only.

2. *Erections as Epileptic Equivalents.*—The author believes that spontaneous, sudden, and tenacious erections, continuing during many years, can be dependent upon epilepsy and even constitute the only symptom of that disorder.

3. *Care of Insane in Morocco.*—The insane are not cared for in Morocco. The harmless wander the streets. Some are worshiped as saints, some pelted with stones, and chased by the gamins. The trouble-

some and dangerous are confined at home or in the prisons or in the monasteries attached to the mosques. Many are shot by neighbors.

4. *Physiology of Sleep.*—The authors conclude that there exists in the cerebral plasma, the blood, and above all the cerebrospinal fluid of dogs deprived of sleep a hypnotoxic property, disappearing on heating to 65°, which provokes an imperious need for sleep and corresponding cellular alterations localized in the large pyramidal and polymorphous cells of the frontal lobe.

WHITE.

Review of Neurology and Psychiatry

(Vol. IX, No. 9. 1911)

1. The Form and Content of the Psychosis; the Rôle of Psychoanalysis in Psychiatry. C. MACFIE CAMPBELL.
2. Epidural Ascending Spinal Paralysis. WILLIAM G. SPILLER.

1. *The Form and Content of the Psychosis.*—It is practically impossible to make a good abstract of this article. It should be read in its entirety. Five cases representative of several types or groups of psychoses, are reported, to illustrate especially that the principles of Freud, formulated by him on the basis of his study of the psychoneuroses, are of value in demonstrating this line of investigation, and of wide application in general psychiatry. The cases analyzed do not present any formulation of results. It is urged by the writer that the popular method of formal differentiation in the study of mental disorders gives only a partial picture of the disorder, and must be supplemented by the method of subjective analysis. The principle of this latter method is a simple one; it amounts to this: "One cannot claim to have thoroughly examined a patient with a mental disorder until one has a complete knowledge, not only of his conscious trends, but also of the subtle underlying forces which are apt to influence mood, and thought, and activity without the individual being clearly conscious of the process." The necessity of such an intimate examination of the patient's inner life appears to be clearly indicated in certain disorders (first group), where mental dissociation plays an important rôle. In such cases the method of examination itself is claimed to be the most efficient part of the treatment. This claim is repudiated by others. The value of this form of investigation is recognized in a second very wide group of mental disorders characterized by a deterioration of healthy interests, a distortion of the mental life, bizarre thoughts and apparently meaningless reactions, and a series of special symptoms (not specified in detail). In this group of disorders, the great defect of the school of formal differentiation is shown. There is a third group in which hardly a beginning has been made in the direction of testing its applicability. The case reported by Jones, of Toronto, in the *American Journal of Insanity*, October, 1910, is illustrative of this group. Jones succeeded in showing that many of the peculiar actions and utterances of the patient were far from being meaningless; they were the expression of deep-seated and disturbing factors in the patient's life. Some of these factors are brought out by Dr. Campbell in the analysis of his cases and he also shows how complicated these disturbing forces may be. The cases belonging to this group present anomalous symptoms. The presence of an emotional factor may not in itself point to any special type of disorder; but the mode in which it is reacted to and

elaborated is what gives to the various types of disorder their special significance. Too much weight may be laid upon a mere demonstration of the presence of certain complexes, and insufficient weight laid upon the reaction to and elaboration of these complexes, which elaboration depends upon those balancing factors in the individual's life, the harmony of which means good mental equilibrium.

2. *Epidural Ascending Spinal Paralysis.*—Spiller reports two cases, one of which at least is apparently unique. In the first case the degeneration of the lateral columns was intense and the paralysis spastic. In the second the degeneration of the lateral columns was slight and the paralysis of the lower limbs flaccid. The lumbar roots were somewhat implicated in the first case and markedly so in the second. The difficulties of clinical diagnosis in these cases of epidural origin is dwelt upon. The first patient, a man of 42, blind from the age of three, presented numbness in the toes, extending later to the knees and showing tenderness in the legs, pain in the lumbar region, and still later nocturnal incontinence of urine, exaggerated reflexes and spasticity in the lower limbs, with preservation of sensibility. There was gangrene of the right hand. The man was unable to walk but could extend his limbs. An intense degeneration was found in the peripheral portions of the cord in the mid-thoracic region, associated with degeneration of the anterior horns of the cervical and lumbar regions and crossed pyramidal tracts and columns of Goll. There was an external spinal pachymeningitis. The external surface of the spinal dura on the ventral aspect was found firmly adherent to the bodies of the vertebræ throughout the spinal cord. The ulnar and peroneal nerves showed a fibrous degeneration and overgrowth. The second patient was a man of 37 who showed on autopsy an epidural sarcoma with some resemblance to endothelioma. The sarcoma was found on the posterior external aspect of the dura, extending from the sacral to the cervical region. Permission had been obtained only for removal of the cord. At the level of the tenth thoracic vertebra, an abscess cavity, spherical, 2 cm. in diameter, containing thick creamy pus, was encountered, and thick creamy pus was found extending throughout the length of the spinal canal, moderately adherent to but not penetrating the dura. Moderate secondary degeneration of the crossed pyramidal tracts and of the lateral periphery of the cord was found. The clinical history had been as follows: Pleuropneumonia in October, 1909, left this patient in ill health. He lost 50 pounds in flesh from November, 1909, to February, 1910, when he died. In the early part of November he began to have pain in the back of the legs and in many of the muscles, and stiffness in the back. The pain gradually disappeared but he became progressively weaker, and a flaccid palsy of the legs set in. The patellar reflexes were weak but obtainable. There were present a double ankle clonus and double extensor plantar response. The abdominal and cremasteric reflexes were lost. There was no atrophy nor marked sensory loss. The control of the bowels was lost, and the man had to be catheterized. The lumbar and thoracic vertebræ were tender to pressure as far as the midthoracic region. The left hand became progressively paralyzed and the right hand weak. The left upper limb showed hypotonicity. The biceps tendon reflex on both sides was exaggerated. All sensations were preserved. The cranial nerves were not affected. The patient died of pulmonary edema. A photograph of the tumor accompanies the paper.

C. E. Atwood (New York).

Allgemeine Zeitschrift f. Psychiatrie

(Band LVII, Heft 4.)

1. Professor Carl Pelman. Complimentary Notice About Dr. Pelman.
2. Memorandum for the Land Directory With Regard to the Psychiatric-Neurological Examination of Dependent Children Removed from School for Special Care at the Institutions Frauenheim, Magdalenium, Moorburg, Stephanstift, Kastorf and Kalandshof. A. CRAMER.
3. Psychiatric Observation of Dependent Children in Goettingen. Dr. REDENPENNING.
4. The Residual Delusions in Alcoholic Delirium. G. STERTZ.
5. A Case of Congenital Absence of the Corpus Callosum in a Case of Juvenile Paresis. OTTO L. KLEINEBERGER.
6. The Pathological Anatomy of Korsakow's Psychosis. ERNEST THOMA.
7. The Symptomatology and Genealogy of Psychical Epilepsy and the Epileptic Constitution. HANS ROEMER.

1. *Prof. Dr. Carl Pelman.*—Complimentary notice about Dr. Pelman, who has just celebrated his fiftieth anniversary as a physician and has been on the staff of the *Zeitschrift* for 20 years.

2. *Neurological Examination of Dependent Children.*—In 1907 the author made a report on the same subject, based upon the material of four of the six institutions mentioned. His second memorandum is based upon a larger material and from it he draws the following conclusions. (1) The percentages of psychopathic and imbecile subjects remain practically the same. (2) The imbeciles can be divided into two groups: (*a*) Those without disagreeable characteristics—who can be kept in an educational institution, though usually without result—and (*b*) those with disagreeable characteristics. (3) For these latter as well as for the psychopaths with disagreeable characteristics special institutions are needed. (4) It appears desirable that the large educational instiutions for dependent children should have special well-guarded departments for mentally fully developed, not psychopathic pupils who show disagreeable characteristics. (5) Among the imbeciles and psychopaths, improvement takes place in a few cases. (6) The observation station in Goettingen has proved an important aid in recognizing and separating the psychopathic pupils and when needed in securing their commitment as insane. (7) Among the dependent pupils there are (*a*) about one half who are intelligent and can be trained readily. (*b*) Imbeciles and psychopaths whose condition is capable of improvement. (*c*) Imbeciles without unpleasant characteristics who do not interfere with the work of an educational institution, but who never become self-sustaining. (*d*) Imbeciles with disagreeable peculiarities, who, like the degenerates of similar characteristics, are incompatible with the preservation of discipline. Their number is not very great. (*e*) Insane, degenerates, epileptics and idiots who cannot remain in educational establishments. In small number only. (*f*) Mentally sound, not psychopathic, pupils with disagreeable characteristics, which in part cannot be improved and from whom after the school period the public has to be protected. (8) The Army and Navy should be kept free of all psychopathic and mentally imperfect young

men of this class of society. A number of tables in which the author's findings are exposed are appended.

3. *Psychiatric Observation of Dependent Children.*—The station in Goettingen was opened with a view of keeping under observation, such children as appeared to the directors of the institutions for dependent children as presenting such peculiarities as to raise a suspicion of mental abnormality, and of later rendering such a report as might serve as a guide in the management of these subjects and the selecting for them a proper occupation. In his article the author gives a brief outline of the general plan of investigation and some of the conclusions which he has formed through his experience there. Inquiry into previous history he finds very fruitful. Inability to get along in the state institutions is usually due to weakmindedness or to impatience of authority and the disturbing influence upon the other pupils of such continual teasing, fault-finding, and plotting as would raise a suspicion of mental deficiency. Occasionally an attempt at suicide or some criminal act was the immediate cause for the transfer. These children are received and kept for a time in an observation ward, just as in an institution for the insane, until some idea is formed of their mental characteristics and any possibly dangerous peculiarities are noted. They are allowed to take part in such pleasures as seem suitable to them, especially such as take them out of doors. Systematic examination as to their mental capacities is generally best deferred until they have been some time in the station. Intelligence testing is carried on according to a scheme proposed by Cramer in 1907. The main point is to find out how well a patient is able to meet the practical requirements of life either in the outside world or in an institution. The inquiry should particularly embrace the affective condition and its lability, ability to enter into the life of his environment, upon the part of the subject, his care of his own person and particularly his motor reactions whether improper, dangerous, or criminal. The possibility of inculcating habits of neatness and industry are of the highest importance and an idea as to the kind of work best suited to the individual should be gained if possible.

As soon as an opinion as to the individual can be formed—in never less than six weeks, often not for several months—a thorough report is addressed to the directory. It is first decided whether the subject must be committed to an institution for the insane or not. If this is not considered necessary and the subject is thought capable of learning something, suggestions as to whether he can be brought up in a family or must be placed in an institution, to what trade or occupation he seems likely to be suited and—in the case of males—whether or not he is capable of serving in the army, are to be made. The great majority of the cases were instances of feeblemindedness in its numerous variations, though there were some examples of psychopathic constitution and a few juvenile dements. The author adds several clinical histories as illustrating the methods pursued.

4. *The Residual Delusions in Alcoholic Delirium.*—While in delirium tremens after the acute symptoms are passed the patient as a rule clears up quickly, in a certain number of cases there remain for a considerable period the remnants of delusional ideas which the subject is unable to correct. Of 33 cases seen by the author at the Breslau Psychiatric Clinic in a year and a half no less than nine showed a persistence of more or less circumscribed delusional ideas for days and weeks after entire clearing of consciousness and absence of any active symptoms of delirium. The

history of each of these cases the author gives briefly with a short analysis of the delusional manifestations. In seeking an explanation for the persistence of the delusions, he is struck by the following facts. In the first place the cases almost without exception are not examples of typical alcoholic delirium. They did not end in the critical sleep but the patient gradually began to rest for short periods and to clear; a termination by slow lysis. Again in at least two thirds of the cases it was noticeable that hallucinations of hearing were more prominent than in the usual delirium. The cases were in fact more like mixed forms of delirium and hallucinosis. In all of them except possibly one, there was a tendency to explanation and systematization of the delusional ideas, there being less confusion than is usual in the average delirium. In many, the delirium was so little active that during the greater part of its course they were kept at home. It is not uncommon to find after the delirium has run its course a somewhat exhausted and dull condition in which the combination of ideas is difficult, a sort of post-delirious stupor. In the author's cases this seemed to reach an unusually high degree and to be more than commonly persistent. That both somatic and mental recovery was delayed, seems to have had something to do with the slow clearing up of the delusional ideas, as the mental activity necessary for their correction seemed to be wanting. It appears as if a feeling of uncertainty and critical insufficiency keeps the patient from occupying himself with the residual complexes. On the one hand the depression of productive thought activity, on the other the uncertainty spoken of above, bring it about that the patient shows no tendency to develop any explanatory ideas upon his delusional remnants or to draw the logical conclusions from the pseudohappenings which should be of the most positive meaning to him so that in most cases there is little affect-reaction. From the retention of these delusional remnants in fact one is justified in thinking that there is great reduction of the ability of carrying on combining and critical thought processes, even when there is little external evidence of this reduction.

5. *Congenital Absence of the Corpus Callosum.*—The eighteen-year-old patient was the offspring of a father who died of general paresis and a mother now tabetic. There were in the family one still birth, three children who died shortly after birth, one imbecile brother and one defective sister, besides the patient. The boy learned to walk and talk early, but was always delicate, nervous, ill-tempered and easily upset. In the school his progress was never satisfactory, but he managed to get through the usual five years' work in eight years. After his thirteenth year he developed no more physically and in his sixteenth year his mental capacity began to decline. Admitted to the Asylum in his seventeenth year he presented the appearance of a boy of ten or twelve years. At this time the psychical and somatic symptoms spoke for the case being one of general paresis and the increase of lymphocytes and albumin in the spinal fluid together with a positive Wassermann reaction, confirmed this diagnosis. Three months before his death he had a typical paretic seizure and gradually becoming bedridden died in marasmus. The autopsy showed hydrocephalus externus and internus, diffuse leptomeningitis, total atrophy of the brain, and as the hemispheres were separated from above it was noticed that the corpus callosum was absent. The two hemispheres were connected by the anterior, middle and posterior commissures, which appeared normal, also in front by the anterior pillars of the fornix, there adherent but which separated from each other posteriorly, so that the lyra was non existent.

The frontal convolutions were smaller than normal and there were some slight anomalies of the fissures, otherwise nothing abnormal on the convexity. On the mesial surface the gyrus fornicatus was absent and the fissures and convolutions showed a peculiar radial arrangement. The pario-occipital and calcarine fissures had not as is usual a common origin but ran parallel to each other. There was no septum lucidum. The thalamus lay free and over its superior free border the fornix stretched backward and outward. Upon raising the margin of the hemisphere, the fornix was seen to lie next to a layer of medullated fibers somewhat resembling the corpus callosum, which, however, upon inspection proved to be the so-called fronto-occipital bundle which, according to the reseaches of Sachs and Schroeder, is to be considered as an abnormal analogue of the corpus callosum and as playing an important rôle in the cases of absence of the latter structure.

6. *Korsakow's Psychosis.*—Examinations of two typical cases of chronic alcoholic delirium with the Korsakow symptom-complex showed the following changes in the brain: (1) Diffuse general degeneration of the brain cells not unlike that observed in general paresis. (2) Degeneration of the medullated fibers in the brain. (3) Increase of neuroglia, both cells and fibers which seemed to take the place of the degenerated ganglion cells and nerve fibers. An exact localization of the degenerative process such as would justify referring certain clinical symptoms to alterations occurring in this or that part of the brain has not so far been possible and in a process which so severely injures the whole nervous system such localization could be expected only under specially favorable conditions.

7. *Psychical Epilepsy.*—The investigation of psychopathic degeneration, individual constitution and heredity is of interest and importance. In general this study is to be conducted along the three natural divisions of (1) The psychotic condition. (2) The psycho-physical and psychopathic constitution. (3) The family tree and table of ancestors. As illustrating the methods of research which he thinks are most likely to prove fruitful, the author gives in some detail his study of the case of a man who presented periodical disturbances characterized by clouding of consciousness and extreme violence, during which time he was violent and dangerous, had assaulted his wife and set fire to his barn, destroyed property, etc. This patient never had severe convulsive attacks, though he showed in their place vertigo, absences and slight motor irritability besides the psychical disturbances. In addition to the ordinary conversational methods, this patient was tested as to his powers of perceptivity and comprehension by Heilbronner's picture method, his manner and time of forming associations were studied, both while he was disturbed and after he had cleared up, shortly before discharge. The experimental analysis of the habitual condition of this subject shows, according to the author, diminished ability to be interested, dullness of comprehension, monotony and slowness of the associations, psycho-motor retardation; further, delayed, but specially persistent affective reaction, decided signs of a certain motor irritability, which by increased demand appears more clearly; psychomotor slowing is often combined with—frequently only latent—psychomotor overexcitability made particularly more apparent by doses of alcohol. The alcohol causes increase of reflexes apparently by taking off cerebral inhibition.

This habitual condition of the patient the author considers as constitut-

ing the epileptic disposition, and sees in it a special form of the congenital neuro-psychopathic constitution, a psychopathic disposition which reacts in a specific manner to the stimuli of the surrounding world and determines the ground type of the whole life. Seeking in the family history for the roots of this important constitutional predisposition, he finds epilepsy, the epileptoid constitution, and senile dementia, besides peculiarities in other relatives, and concludes that the patient is a member of a decidedly epileptoid generation with preponderant neuro- and psychopathic descendence. Studying further the history both family and personal of a cousin of the patient who showed some similar traits, the author is fortified in the opinion that throughout the whole family there runs a certain epileptoid tendency. This paper is interesting particularly as showing how a study of this sort may well be conducted.

C. L. ALLEN, (Los Angeles).

Revue de Psychiatrie et de Psychologie Expérimentale

(June, 1911)

1. Question of Method. Dr. V. BRIDOU.
2. Study of an Epileptic in a State of Predemential Obnubilation. HENRI DAMAYE.
3. The Situation of the French Insane in Tunis. Dr. POROT.

1. *Question of Method.*—A discussion of evolution, causation, determinism, and the use of hypothesis in psychology.

2. *Epileptic Obnubilation.*—An effort to define the advent of dementia and so distinguish it from transitory conditions of obnubilation and from such states as confusion. The article is of no particular interest.

3. *French Insane in Tunis.*—An article of local interest only. There are no asylums in Tunis.

(July, 1911)

1. Mental Disorders and Auto-Conduction. ED. TOULOUSE and M. MIGUARD.

1. *Mental Disorders and Auto-conduction.*—The authors offer in this article what they claim to be a new conception of the pathogenesis and clinical synthesis of the psychoses.

The article is a lengthy discussion of the nature of insanity, its social and bio-social relations and its classification. The authors recognize that we have to deal with the same mechanisms in the abnormal as in the normal mind. They consider insanity as a bio-social phenomenon—as a condition making it impossible for a person to get along in the social milieu and having to be cared for and classify the psychoses into two great groups—the state of defect and the vesanias. They believe that they have proposed a new conception of insanity which is comprised in distinguishing a disorder of conduction or of application—as in confusion—and a defect in the intellectual mechanisms—as in dementia.

(August, 1911)

This number is entirely taken up with a brief abstract of the several papers presented at the twenty-first congress of alienists of France held at Amiens in August, 1911. This account does not lend itself to further abstracting.

WHITE.

Monatsschrift für Psychiatrie und Neurologie

(Vol. XXIX, No. 4. April, 1911)

1. Continuous Giddiness (Vertigo Permanens). H. OPPENHEIM.
2. Observations on Sugar Excretion in the Insane. W. Tintemann.
3. System Degeneration of the Commissure Bundles of the Brain in Chronic Alcoholism. E. MARCHIAFAVA, A. BIGNAMI and A. NAZARI.
4. Results of Association Experiments in Defectives, by Means of Simply Uttering Words. ERICH CANTOR.
5. Epilepsy with Tumor of the Temporal Lobe. M. ASTWAZATUROW.

1. *Chronic Giddiness.*—Six cases form the basis of the communication. All were neuropathic or psychopathic individuals and in most there was bad heredity. Precipitating causes were present in some cases. The condition always started with a comparatively sudden attack of vertigo, often with vomiting and prostration. After one, or perhaps after several separate attacks, the vertigo became constant. The author describes numerous characteristics of the vertigo, the most striking of which was the benefit experienced by the patients when riding in a railroad train or automobile, or by making voluntary swaying movements the reverse of those felt subjectively. Although the symptoms point strongly to the condition being on a basis of a neuropathic diathesis, the author feels that there must be some affection in the central nervous system. As there were no vestibular or cerebellar symptoms, the location of the affection is hard to determine. The literature does not contain any mention of cases identical with these.

2. *Sugar Excretion.*—From an observation of a number of cases of various psychoses sixteen of which are described in detail, the author does not arrive at any very definite conclusions. Glycosuria occurs in a variety of forms and with varying duration in any of the psychoses and a relationship between the two cannot be positively established. The close association between affect and sugar excretion, claimed by Schultze and Knauer, was lacking in this series of cases.

3. *System Degeneration.*—In 1903 the authors published observations of three cases of chronic alcoholism which showed lesions in the corpus callosum. In 1907 further changes were described in the anterior commissure and later in the central portion of the cerebellum, leading to the conclusion that system degeneration in the fibers of the commissures were found especially frequently in alcoholics. To this material the authors now add twelve new cases from which they are able to refer to a "degenerative alteration of toxic origin which affects special segments and bundles of the fibers of the commissure-masses and may therefore be regarded as a systematic commissural disease." Both in the corpus callosum and the anterior commissure the degenerated area was always in the middle zone while the dorsal and ventral remained free. The lesions in the cerebellum were inconstant. A vertical transverse section is best for study of the condition and the alteration is often easily seen with the naked eye. A dissertation on etiology, differentiation and clinical connections follows, but the conclusions are vague and admittedly difficult of proof. The article is profusely illustrated.

4. *Association Tests.*—The author's method consists of simply calling out to the subject a number of words with a variety of meanings. No instruction was given to start with and no explanations of the words.

The normal individual usually appears puzzled and asks the meaning of the examiner. The reactions in the various mental diseases show some characteristic differences. The manic seizes quickly upon the word and continues in a flighty strain or with sound association, being diverted by his surroundings. The melancholic grasps the word slowly or not at all. His replies are scanty. He reacts well to words that concern the depressive content of his ideas. Epileptic imbeciles, paretics and cases of senile dementia (speaking only of those which do not show any disorder of stream of thought) often ask the meaning of the word and what they are supposed to do or they repeat the word in a questioning tone and frequently give no answer at all. Finally they often enter into the experiment without noting the peculiarity of the procedure. They are apt to go on in a gossipy strain relating in a rambling manner, incidents drawn from their memory and suggested by the word. Their thought does not follow any particular strain and an egocentric trend is usually noticeable.

5. *Epilepsy with Tumor.*—Epilepsy is quite frequent in temporal lobe tumors but there are many objections to its use as a localizing symptom of such condition. In the first place not a few cases have no epilepsy and in the second place epilepsy is not uncommon in tumors in other localities. Thus it is practically impossible to use epilepsy as a localizing symptom in any case of tumor. It is worthy of mention, however, that the epilepsy in temporal tumors has many peculiarities. Hallucinations of taste, smell and hearing and even of sight are very common. The great variety of the epileptic manifestations (incomplete convulsions and equivalents) is notable.

J. N. Moore (Central Islip).

Book Reviews

THE MEDIEVAL MIND. A History of the Development of Thought and Emotion in the Middle Ages. By Henry Osborn Taylor. Macmillan & Co., London. 2 vols., pp. 1202.

To say that this work is a masterful presentation of its subject, that it illumines the middle ages by wisely chosen selections from its literature, its history, its philosophy, its theology, and that the presentation is charming and impelling is all superfluous for those who know aught of the author. If this sort of thing were all that could be said there would be no purpose in reviewing such a work in these pages.

As the years go by it becomes increasingly evident that the business of psychiatry is the study of man—not from any narrow reaction-time point of view, but from a point of view that is at once as broad as all of his varied mental activities and which is animated by motives that are humanistic rather than laboratory.

For a long time the men who were devoting themselves to a study of mental disorders have, through over-modesty perhaps, been overawed by certain of their neurological and psychological brethren who have voiced the fundamental principle that before we can understand the abnormal mind, before we undertake the study of the disordered psyche, we must first study and have an understanding of the normal mind.

The authoritative statement of such-like principles made the psychiatrist feel that he was out of touch with his brothers of the other callings and that they were out of sympathy with him, and so while these naïve adherents to the cult of the obvious have gone on repeating such platitudes and sticking to the well-worn path because of a myopia that made the blazing of a new trail unthinkable, the psychiater, freed from all constraint, has gone on developing his own psychology, which to meet his demands has had to be practical, humanistic, and finally has reached out into all of the fields of man's mental activities and there found food for its growth.

Speaking for the psychiatrists, I may say we have waited in vain for the psychologist to tell us what the normal mind was, to describe, define, limit, and explain it as we have also waited in vain for the neurologist to turn from peering through his microscope and pronounce the mystic words that will solve all our difficulties. And while we have been waiting we have had pass before our wondering gaze in kaleidoscopic complexity the hundreds and thousands of the insane until we have finally come to a full realization of the futility of waiting and the necessity for a practical taking up of the problems at hand.

A priori is it not a rather strange proposition to say of a complex mechanism that we must only attempt to understand it by observing it after it has all been put carefully and accurately together and is working perfectly? When Helen's babies "wanted to see the wheels go 'round" they took the watch apart. Is not that precisely what the psychoses do for us? We cannot control man as we can the lower animals and are practically

dependent upon the experiments made upon him by nature—Why should we close our eyes to them? What would we know to-day, for example, about the psychology of language if pathology had not given us the problem of aphasia? Would we ever have been able to guess that it had a cerebral locale had this avenue of approach to the problem been neglected? So it is with the elements of mind. When all are well balanced and working in harmony their analysis is a hopeless task—but when mental disorder comes along then immediately appears a disproportion that throws certain things into relief that might never otherwise have been suspected.

If the mind be considered as one would consider a living organism reacting to changing conditions in its environment then not only do inherent disorders have interest, but the nature of mind, its methods of reacting, can be studied to great advantage under varying conditions. This is precisely what the laboratory man tries to do. He varies the conditions of his experiment and notes the results. Precisely just such changes of environment have taken place during historic times and the study of man's reactions as his surroundings, his education, his ideals were varied becomes a study of the utmost psychological importance.

Since the days of Buckle history has ceased to be a bare chronological recounting of events. He clearly saw that all of the multitudinous things that made up man's environment reacted upon the man and modified his actions. Buckle saw that the actions of men were caused by antecedents which existed either in the human mind or in the external world and defined history as the modification of man by nature and of nature by man. The author of the present work has endeavored, in the same broad way, to trace the intellectual and emotional development of man through the middle ages by seeking to understand all of the things out of which man of the middle ages grew and all of the influences surrounding him which shaped his thoughts and feelings.

In accordance with the above principles he has laid the foundation by a careful analysis of the classical heritage of the middle ages, and a study of Latin christianity and patristic thought. The analysis proceeds to a study of the transmission of antique and patristic thought and so comes to an understanding of the medieval mind from a study of how it was built up from the material it received from the past, the form in which that material was transmitted and received, and what influences it was subjected to in its immediate environment.

All these facts, the material received from antiquity, its remoulding, and the intellectual and emotional environment of the times make conditions for studying man's methods of reacting quite comparable to the laboratory experiment or the pathological lesion. The conditions in the middle ages and the conditions to-day, at least in the civilization we are familiar with, are so entirely different that it is well worth while to study their effects upon the intellectual and emotional reactions of those centuries as shadowed forth in its history, its art, its philosophy and its religion. This study is of double importance and significance to the psychiatrist when we remember that the mechanisms of mental reaction are founded on the same principles precisely whether they occur in the so-called normal or the so-called insane. The principle of the parallelogram of forces is the same whether it is applied in sailing a boat or in cracking a safe.

The author deals with his subject in three ways: after a general historical method of recounting events and their bearings upon each other,

by discussing certain aspects of the problem such, for example, as Feudalism and Knighthood, Romantic Chivalry and Courtly Love, Evolution of Medieval Latin Prose, Medieval Appropriation of the Roman Law, Scholasticism, The Universities, and by taking up the study of certain individuals who at once reflect the spirit of the medieval times and have given something to them such as St. Francis of Assisi, Hugo of St. Victor, Albertus Magnus, Thomas Aquinas, Dante. It is the discussion of the special aspects of the middle ages and the study of individuals that especially interests us.

Of especial interest among the various general aspects of the middle ages discussed is the chapter on The Growth of Medieval Emotion, which discusses The Patristic Chart of Passion and the Emotionalizing of Latin Christianity. All this becomes of great interest when reading such a chapter as Mystic Visions of Ascetic Women, in which the emotional values are given concrete expressions by such women as Hildegard of Bingen and Mechthild of Magdeburg. The chapter on The Hermit Temper is especially illuminating. Here we see set forth how the special ideals of the times, the belief in this life only as a preparation for the life to come, led literally to the development of a true "shut in" character—mute, negativistic, ecstatic—in the effort to live the *vita contemplativa*.

It can hardly be doubted that the hermit life must have attracted many of præcox tendencies as it offered just exactly what the præcox seeks—protection from invasions from the outer world.

The placing of the good before the true and the minimizing of this life to the point of insignificance produced conditions of mind difficult for us to comprehend at this time. Scripture contained the great truths and natural phenomena were used solely to elucidate and set forth scriptural truths. If the two conflicted, why, so much the worse for nature. Man's eyes were turned upward. It was never necessary to test out facts by experiment. All sorts of legends were set forth as facts in that curious work of *Physiologus*. For example there is the story of the phenix. It lives in India, and when five hundred years old fills its wings with fragrant herbs and flies to Heliopolis. Here it commits itself to the flames in the Temple of the Sun. From its ashes comes a worm which, on the second day becomes a fledgling, and on the third a full grown phenix that flies back to its old dwelling-place. This is all set forth as fact. It never occurs to any one to ask if a phenix has ever been seen, or to explore the territory where it was said to live. The facts, as stated, are merely incidental, the all important thing is the doctrinal bearing of the story. The phenix is the symbol of Christ. The two wings filled with sweet herbs are the Old and New Testaments full of divine teaching.

It is interesting to follow out trains of scholastic reasoning based upon entirely imaginary premises. It quite reminds one of the logical working out of paranoid delusional systems. The middle age discussion of angels is such an instance. Thomas Aquinas takes this matter up fully. Angels are spiritual and not corporeal—immaterial creatures. With this premise he tries to define their relations to space and locality. "Equivocally only may it be said that an angel is in a place: through application of the angelic virtue to some corporeal spot, the angel may be said in some sense to be there." As angels are finite, when one in this sense is said to be in a place it can not be elsewhere. "Yet the place where the

angel is need not be an indivisible point, but may be larger or smaller, as the angel wills to apply his virtue to a larger or smaller body." Two angels cannot occupy the same space at the same time. Angels may pass from one place to another without traversing the intervening points. And so on, each statement being fully supported by lengthy reasonings.

The author's discussion of certain of the great characters of the middle ages would put to shame many of our case records so far as throwing a real light on the nature of their personality is concerned. Noteworthy in this respect are the chapters on the Quality of Love in St. Bernard and the Heart of Heloïse.

And finally the author's greatest achievement has been to put himself into sympathetic relations with the middle ages—to look at things from the standpoint of conditions as they then were. How important this is! How long it took us to learn that children do not look at things as we do—that they have not the same material, the same standards, to think with. Only when we not only knew, but felt, this truth did we begin to get anywhere with the child mind. Only rarely do we find the author slipping into an expression that suggests even that he is looking at the middle ages from a twentieth century view-point.

The reviewer is a firm believer in psychiatry as a cultural discipline. To those who have come to know human nature from its study in the wards of an asylum the reading of this work cannot fail to be other than altogether delightful, for not only will they reap the pleasure from an interesting subject learnedly and charmingly presented, but they will be able to read a great deal more of the human story between the lines.

WHITE.

HANDBUCH DER NEUROLOGIE. By Many Authors. Herausgegeben von M. Lewandowsky. Zweite Band. Specielle Neurologie, 1. Julius Springer, Berlin.

The first volume of this handbook gave promise of great things. The second volume has amply fulfilled. The neurologist has an authoritative and attractive series of small monographs, which adequately represent present-day attitudes. There was much need for such a work, as the older classics were becoming threadbare and barren. Every chapter in this work contains new facts, and new generalizations which the present day status of neural anatomy and physiology demanded.

The volume opens with exhaustive chapters on Neuralgia and Myalgia, Neuritis and Polyneuritis, and Myositis, by Wertheim Salomonson of Amsterdam: These chapters are written in a most pleasing style, direct and to the point.

Injuries to the Nerves are discussed by Kramer of Breslau, and Nerve Tumors are taken up by Salomonson. Lewandowsky has an excellent chapter on Myasthenia, in which due attention is given to the problem of metabolic disturbance in the causation of this disorder. Cassirer gives a masterly presentation of Oppenheim's Disease, Myatonia Congenita. Congenital and Infantile Muscular Defects are written upon by Hirschfeld of Berlin and Vogt of Frankfort.

Then follow two extremely fascinating chapters, one by Marburg on the chronic muscular atrophies. He groups them under the head of Nuclear Atrophies, Neural Atrophies and Muscular Atrophies, or Dystrophies. It is a chapter full of good descriptions, and thorough

study. Jendrassik's chapter on the Hereditary Diseases completes it, as here one finds the dystrophies more thoroughly entered into.

Lewandowsky follows with four chapters, one on the Anomalies of the Spinal Cord, a second on Injury to the Spine, Spinal Cord and Spondylitis and Circulatory Diseases of the Cord. Needless to say these chapters show all the freshness and vigor of Lewandowsky's work.

Leri of Paris then sandwiches in a chapter on Spondylose Rhizomelique in this group.

Tumors of the Cord, Abscess of the Cord are written by Flatau of Warschau. Syringomyelia, an excellent presentation, is by Haenel of Dresden. Henneberg has a full discussion of his Funicular Myelitis

An especially full chapter of nearly 100 pages is on Acute Poliomyelitis. It is by Wickmann of Stockholm, and is the best thing of its kind yet published.

Marburg's Multiple Sclerosis contains the newer researches as does the chapter on Tabes by Karl Schaffer. Finkelnberg of Bonn closes the volume with a chapter on Diseases of the Meninges.

Each chapter is complete and separate, yet at the same time there is little of that conflict of opinion, which mars many composite books. Each author is thoroughly en rapport with his subject, and has given a masterly résumé.

From the standpoint of bookmaking, the publishers have done their share in giving an attractive presentation. The illustrations are excellent and numerous, and add much to the text. A third volume is in press.

JELLIFFE.

HANDBUCH DER PSYCHIATRIE: Herausgegeben von Professor Dr. G. Aschaffenburg, Spezieller Teil, 4. Abteilung, 1. Halfte, Dementia Præcox oder Gruppe der Schizophrenien, von Professor E. Bleuler, pp. 420, Franz Deuticke, Leipzig, 1911.

In a word this work is by long odds the very best treatment of the whole subject of dementia præcox extant. It is done with that thoroughness that we think of as German, and there seems hardly to be a single aspect of all the many and varied questions that surround this disease group that has not received full discussion.

After a short historical introduction in which the author gives full and absolute credit to Kraepelin for outlining the dementia præcox group he plunges into the midst of his subject, first taking up the symptomatology. The symptoms are divided into the fundamental symptoms and the accessory symptoms. These are discussed individually and in detail, and then comes the second part of the book which treats of the various types of præcox, the paranoid, the catatonic, the hebephrenic, and the simple forms, together with certain special groups of cases, namely, the periodic, cases occurring in advanced age, certain etiological groups as the prison syndrome, and the grouping according to the intensity of the symptoms. Then follows a discussion of the course of the psychosis, then its combination with other psychoses, and the fifth part is devoted to the discussion of the idea of the disease, or the disease-concept. This is an admirable chapter and is well worth reading, even by those who are not specially interested in its particular application to dementia præcox, for it contains a philosophical discussion of what constitutes a disease entity, how it is delimited, and how it differs from symptom complexes and the like. It is Bleuler's belief that Kraepelin has outlined a true disease entity in dementia præcox.

In discussing the question of the name "dementia præcox" he calls attention to the fact that the so-called recoveries are really recoveries with a certain amount of defect but even so the disease idea is not concerned with a cross section at any particular point. The important thing is that the tendency of the disease is to dementia. It is a matter of indifference whether this tendency carries the case to a true dementia in a particular instance or not.

Following this portion of the work comes a section on diagnosis, then prognosis, then on frequency and distribution, and one on causes, and then a very large and very important section of about one hundred pages on the theory of the disease. Here each one of the symptoms is taken up, and the present explanation of the symptomatology is entered into in detail. The author discusses his own theories of autism and ambivalency, gives his own ideas of negativism, and enters very freely into the discussion of other theoretical considerations. It is here that we see that the unpsychological appearance of præcox is merely an appearance taken from surface indications and that as soon as an effort is made to get to the bottom of the symptoms they become understandable. Of course many of the symptoms have not yet been fathomed, but on the other hand many have, and as the days go by dementia præcox becomes more and more understandable. From this point of view Bleuler says that the disease may be very well considered entirely as functional and from a psychological standpoint. The true relation of the pathological changes that have been found to the symptomatology is altogether uncertain. Bleuler gives great credit to Freud's method of interpretation and gives scores of illustrations of præcox delusions based upon Freudian mechanisms. This portion of the work is of extreme value in coming to some understanding of these cases which are so difficult and so inaccessible. The end of this chapter on Theory discusses the pathological findings, and the final section of the work is devoted to therapeutics. At the end there is summed up a bibliography containing 850 references.

This work should be in every library which pretends to deal with matters psychiatric. It is also highly to be commended to the reader for a thorough-going treatise of a single disease considered in all of its broad ramifications and from all possible viewpoints and handled philosophically by a man of profound learning.

WHITE.

LEITFADEN DER ELEKTRODIAGNOSTIK UND ELEKTROTHERAPIE FÜR PRAKTIKER UND STUDIERENDE. Von Dr. Toby Cohn, Nervenarzt in Berlin. Vierte Auflage. S. Karger. Berlin.

Toby Cohn's work now appears in its fourth edition. Needless to say it is a most complete short introduction to electrodiagnosis and electrotherapy.

It has grown very materially since its first edition, now over ten years old, with new and added figures and the discussion of new apparatus and new methods.

JELLIFFE.

THE CORNER OF HARLEY STREET. Being some familiar correspondence of Peter Harding, M.D. Houghton Mifflin Co., Boston and New York.

Of all the delightful and clever pens that have sketched social phases of proper folk, including the Spectators, the Tatlers and the Autocrats, the

last, but by no means the least, is that of Peter Harding, M.D., a London consultant, whose true name has not been made public.

As Peter Harding, consulting physician, with that ripe perception of values that comes to the man who has made life move a bit, sits down for fifteen minutes before dinner to accept his old friend's invitation to go trout fishing with him in Devon, the noise of traffic changes to the splashing of a brook, and there is unrolled before the reader the true meaning of holidays, the vision of those super moments of joy in nature and in friendship, that make life worth living.

Dr. Harding has a son at Trinity College, Cambridge, who writes to his father for advice about studying medicine, which advice the successful parent declines to give, and then follows such a crisp analysis of the exactions and possibilities of the scientific physician's life, such an illuminating flash of the moment that may come, which by his "grain of extra knowledge, he may shape a million destinies," such a glimpse of the joy that comes from helping human needs, that we are not surprised when we learn that Horace is "going in" for medicine.

There is no phase of modern speculation which Dr. Harding does not glance at and so surely; no little canker of society but he touches, oh so lightly and so surely with his healthful caustic: religious cant, the too-too nice woman, the misplaced delicacy, or the indelicate effrontery of the sex-question and youth, yellow journalism, even to the selling qualities of modern novels and the human qualities of the authors. Whatever we talk about to our intimates Dr. Harding has written to his, with deeper, surer touch than is given to most—the vision of light in hopeless illness, the philosophy of living, after death has come to the heart, love and marriage and how much is worth while.

The letters almost make a novel, the character of Mrs. Hardy and sons and daughters that you wish you knew move so freely across the pages, and though Mollie's love affairs are a good deal on the reader's mind, as well as on her father's, yet they turn out most satisfactorily. But it is as always with the physician and his penetration of life that the interest lingers—his hospital and the vast complex work. One is tempted to forget Drs. Lydgate and McClure and say this is the finest study of the physician that has appeared in literature. It is its all-pervading humor that makes the truths gleam so brightly.

JELLIFFE.

UEBER DEN TRAUM. Von Prof. Dr. Sigmund Freud, in Wien. Zweite Auflage. J. F. Bergmann, Wiesbaden.

This second edition of Freud's Essay on Dreams is well worth having. In short concise form the author develops his main theses concerning the function, the content, and the significance of dreams. While it does not by any means contain the wealth of material contained in his Traumdeutung, it nevertheless gives the chief outlines of his point of view.

JELLIFFE.

SÉMIOLOGIE RÉELLE. Par Henri Claude et Stephen Chauvet, Paris. A. Maloine, Éditeur, 1911.

This monograph is a careful study of the symptomatology resulting from complete sections of the mixed peripheral nerves. It takes up the consideration of this symptomatology from the different standpoints of

motility, electrical reaction, superficial and deep sensibility, stereognosis, vasomotor and sudorific reactions, and thermic and trophic phenomena. There is also a chapter treating critically the various hypotheses that have been formulated to account for the facts. The work closes by an account of a carefully observed case of total section of the median nerve. This case is beautifully illustrated by photographs of the hand, radiographs of the hand, diagrams, and fingerprints showing the atrophy of certain portions of the pattern. This latter fact might be of interest to those who are engaged in the question of identification of fingerprints. The work is an excellent study, and commends itself for its careful covering of the facts and its minute analysis of the disturbances. It is a distinct contribution to the study of the peripheral nerves.

WHITE.

KLINIK UND BIOLOGIE DER THYMUSDRÜSE MIT BESONDERER BERÜCKSICHTIGUNG IHRER BEZIEHUNGEN ZU KNOCHEN- UND NERVENSYSTEM. Von Dr. Heinrich Klose und Prof. Dr. Heinrich Vogt. H. Laupp, Tübingen.

Thrown into monograph form, this reprint from the *Beiträge zur klinischen Chirurgie* gathers practically all of the available knowledge concerning the thymus. The phylogenesis, morphology, clinical manifestations of thymus disease, and experimental researches on the thymus are presented fully and thoroughly.

The loss of calcium, particularly in the bony system, is a noteworthy factor in experimental thymus extirpation. This stands in close relationship to increased acidosis, and the authors consider in extenso the complicated interchanges between the altered calcium metabolism of phosphoric acid combinations and nuclein synthesis.

Through certain of these faulty metabolic activities tetany like symptoms develop, and these researches afford additional insight into certain pathological spasmodic motor activities. The authors therefore consider acid intoxication as one of the important elements in the production of tetany.

Further attention is given to microscopical increase in the tissue fluids, and the swelling of the tissues themselves. This swelling may take place in the brain tissues as well. The importance to the life of the animal of proper thymus functioning is thus brought into the foreground, and special weight is laid upon thymus autoplastic surgical procedures in therapy.

This is a timely and valuable monograph calling attention to many heretofore unknown factors in nervous pathology.

JELLIFFE.

GEHIRN UND SEELE. Von Dr. Erich Becher. Heidelberg, 1911. Pp. 405; price M. 5.40.

This work of Becher is rather comprehensive in its conception. It starts with a description of the nerve cell, and ends with the soul, carrying one over intermediary stages of cortical localization and psychology. It contains a vast amount of information, including a setting forth of many important theories of mental activities. The book naturally suffers from endeavoring to cover too much ground in too small a space, and although it has upwards of 400 pages it is still only a sketch of the subjects with

which it deals. On the whole it is a work that would appeal rather to those who are not engaged in psychological or psychiatric study, but to those in some other field of work who want a review of the whole question of mind and body.

WHITE.

L'HOMICIDE EN PATHOLOGIE MENTALE. Par le Dr. D. Valdoff. Medicin de l'Hopital Alexandre Premier (Sofia). A. Maloine, Editeur, Paris.

Professor Legrain has written a preface to this interesting volume. Homicide is, correctly speaking, a symptom, it is an act solely, and usually the result of the activities of a diseased brain.

The author entirely rejects the old notion of a homicidal mania, as promulgated by Esquirol a hundred years ago, and still discussed as an entity, by supposedly "learned counsel," at the present time.

He then discusses homicidal acts as occurring in the various psychoses as follows: The nosology is difficult to determine. It is not even modern French (1) Chronic delusional states; more or less systematized and prolonged. (This would include the dementia paranoides, paranoia, and manic depressive cases of Kraepelin's nosology.) (2) Acute delusional states (illusions, hallucinations, confusions, etc.) (Here the Kraepelian would include the various toxic and exhaustive states, many dementia præcox cases, possibly some paretics, syphilitic psychoses, etc.) (3) Demented states. (4) Maniacal states. (5) Impulsive states. (6) Passional states. (7) Secondary states, and (8) Constitutional states.

Although the author's nosological conceptions are hazy, his discussions are very illuminating, and the book offers much useful material for the psychiater and medico-legal worker.

JELLIFFE.

PSYCHOLOGY AND PEDAGOGY OF WRITING. By Mary E. Thompson, A.M., Pd.D. Baltimore, Warwick and York, 1911. Pp. 128; price $1.25.

This work is a study of writing primarily from the standpoint of the teacher, and a study of the results of teaching writing in the different grades of the graded school. For those engaged in this department of educational work the book is valuable and suggestive. It contains, besides the results of ordinary observations, a fairly full account of the psychology of writing, and a most interesting chapter on the historical development of the alphabet.

WHITE.

MONISTISCHE ETHIK Gesetze der Physik und Ethik, abgeleitet aus den Grundprinzipien der Deszendenztheorie. Von Dr. M. L. Stern. Leipzig, J. A. Barth, 1911. Pp. 248; price M. 6.30.

This book is an essay in monistic ethics. It is philosophical in conception, and has little in it of interest to psychiatry. The work is rather diffuse, and although the title might indicate that we would expect a critique of some of the recent work in eugenics, we look for it in vain.

WHITE.

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THE NEW ERA IN NEUROLOGY[1]

By Dr. W. N. Bullard

The first stage of scientific and practical neurology is passing away. It does not cease suddenly, abruptly, but its characteristics are gradually replaced; its aims become changed and its methods are expanded and new ones employed. Yet here and there the old conditions remain and we find a few able and diligent investigators following the old paths with more or less of the old limitations. But the more progressive, and above all, the younger men seek to carry on the advance in wider regions. Many conditions of necessity set aside in earlier days are now assuming a new importance, and demand not only passive recognition but active consideration. The interdependence of many sciences is forcing itself upon us and is proclaiming its existence practically in such a way that it must be accepted. The isolation of a circumscribed scientific region is not longer possible.

When neurology first separated itself as a distinct department of clinical medicine, it dealt largely with a class of diseases little known, poorly recognized, and rather outside the interest of the general practitioner, who considered their study as exceedingly difficult and beyond his special province, and also, in many cases at least, as of rather scientific than practical interest because the persons afflicted with them were incurable, and it was a waste of

[1] Presidential Address to the American Neurological Association.

time to attempt treatment. Such treatment as electricity was then beyond the means or the knowledge of these physicians.

The neurologists of this period found themselves confronted with a mass of confusing and ill-understood symptoms and conditions, some of them apparently hopeless and nearly all chronic. I will not speak here of the courage, skill and perseverance of those who, in spite of the indifference of the profession at large, and even of its opposition and discouragement, persisted in their work and gradually established system and order out of the old confusion. The result of the condition just described was that the neurologists in order to be of practical value to their patients, to help and to cure them, were obliged to devote nearly the whole of their study to the symptomatology and the pathology of the affections they were treating and to their diagnosis. In the old era, scarcely anything else than this has been done or could be done. How the ground has been cleared, what immense advances in knowledge have been made within the last thirty years, we all know. The highest honor is due those through whose faithful labor and skill such wonderful progress has been achieved in the treatment, the alleviation and the cure, of the diseases of the nervous system, the most terrible and most afflicting of all diseases. From the very nature of the conditions it was necessary that all their effort and all their attention should be focused upon certain aspects of these diseases, and so serious were the difficulties to be surmounted, so apparently insuperable the obstacles, so great the amount of labor and of time demanded to solve the pressing and important daily problems, that all the energy which could be obtained was perforce concentrated in the directions of symptomatology, diagnosis and treatment.

A little has been done in etiology, but the larger part of our knowledge in this is due to workers in general medicine or in other specialties. To the general clinicians we owe much of our knowledge as regards the etiology of the various forms of meningitis, and our present views in regard to the relations of dementia paralytica and locomotor ataxia to syphilis we owe in large part to workers outside our own specialty. The immediate cause of cerebro-spinal meningitis and such imperfect information as we possess in relation to anterior poliomyelitis has been obtained from others than neurologists. I do not speak of these facts in criticism. They are only a few among the many which should so

strongly impress us with the mutual relation, the interdependence of the various lines of medical observation, inquiry and research. No single line of work can long live separated from the other forms of practical and scientific progress. The advance of each specialty can and does help others, sometimes in a direct way, sometimes by an obscure and indirect route. In the great and final result, all methods must combine. All great facts must be approached from innumerable sides.

In the new era, neurology is widening; it is taking practical notice of its relation to other interests, to other lines of work, to the other humanities. The single definite and circumscribed relation of physician and patient, the personal relation, however important, valuable and highly salutary in itself, must give way at times to other and wider relations. The personal patient is not alone to be considered by those who would lead in neurological advance. The public as a whole have put in a claim which we cannot ignore. There are many ways in which the neurologist should be able to take his part in relation to the public health and public welfare in the lines of his profession. In the line of quarantine service, the study of leprosy and of beri-beri belongs strictly in the line of the neurologist, and other diseases might be added. Most important, however, is the prevention of injury to the public through those incapable of caring for themselves. I do not mean simply the dangerous and acknowledged insane. The danger in their case is at least well-known. But there are many forms of brain deterioration and brain lesion, the dangers from which the public has not learned to fear, which must be guarded against.

Epileptics of certain kinds are exceedingly dangerous. Risks, often very serious, are constantly taken in the employment of epileptics in many trades and forms of work. Certain of these risks to the public safety should undoubtedly be forbidden by law. However hard it may be for the sufferer to be unable to obtain employment, the risk to the public is too great to be permitted. It is doubtful whether those epileptics who are subject to frequent attacks should be allowed to occupy any places of responsibility in either public or private service, or whether they should be allowed to work at all with others outside their own families without constant supervision.

As to the public service, it is probable that no epileptic should

be eligible for any place whatever. This would apply to all public carriers and to all public service companies and their agents—to all express companies, telegraph and telephone companies, railroads, steamboats, and to all employees of cities, states or of the national government.

Knapp has already called attention to the dangers existing from the employment of persons suffering from paralytic dementia in the public carrier service, and what has been said above in regard to the epileptics applies equally in these cases. Some form of precaution must be used to prevent the placing of such persons in places of responsibility and to reasonably protect the public.

Though these are the classes whose employment is most dangerous to the public both from their numbers and from the character of the disease with which they are afflicted, there are other mentally diseased or mentally imperfect persons who are likewise dangerous. Those suffering from various forms of incipient and unrecognized insanity, persons with dementia præcox, are not free from danger to the public.

In close connection with the subject of public safety and welfare in connection with the insane is that of public knowledge in this regard. This opens so wide a field for discussion that the more important and salient facts only can be mentioned, and the causes and excuses and exceptions cannot be considered. In the first place in many parts of the country, in fact throughout the country almost without exception, we find the mass of the medical profession profoundly ignorant in regard to mental disease and what is even worse, profoundly indifferent. Neurology and psychiatry are considered special and peculiar branches of medicine, separated from the main body of medical learning, presenting special difficulties in their study and comprehension, and their practice is considered unattractive, unremunerative and often impractical, inasmuch as it can lead to no cure in the case of the patients. As a specialty to which to devote his life, this branch of knowledge (mental disease or psychiatry) does not appeal to the average medical student. As a portion of general medical knowledge, it is considered too difficult to be mastered without special effort, usually not worth while and too remote from the main body of medical and surgical practice to be required in the ordinary medical equipment. As a result, the average medical practitioner is not interested in such cases as

may fall under his care, and he either neglects them, considering them incurable, or he turns them over to some specialist or institution, or, most dangerous of all, undertakes to treat them himself on general principles with total lack of special knowledge.

As this is the condition of the medical practitioner, what can be expected of the public?

The neurologist of the future has two courses from which to choose. He may ally himself so closely with general clinical medicine as to become for practical purposes a general physician with a special leaning or tendency to the study and care of diseases of the nervous system, or he may choose to devote himself more specifically to the diseases of the nervous system as a whole, including in these fully and without reserve the department of psychiatry and the care, study and alleviation of the mentally deficient and epileptic.

I believe that it is only through the thorough study of all the conditions afflicting the nervous system in health and disease that the best neurologists are to be formed.

The practical results of this—if this is to occur—must be the closer approximation of neurology and psychiatry (including the study of the epileptic and the feeble-minded).

The associations dealing with these subjects must draw nearer together and coöperate more closely. They must realize that their interest and their work must lie largely in common directions, and their studies must embrace subjects of interest and importance to the members of each association. As soon as active coöperation in these various lines takes place, it will be impressed on all how closely they are and should be related in a large proportion of subjects. It is true that in certain directions—on what may be termed the circumference of each subject—there are questions and problems which do not strictly come within the interests of the other. The neurologist includes in his care and study many diseases and conditions which from other points of view are to be considered as subjects of clinical medicine as a whole, and with which the psychiatrist as such has little concern. And yet most or all of these conditions in one or another stage are apt to force themselves on the attention of the wise, intelligent and observant *clinical* psychiatrist.

All psychiatrists, however, are not clinical psychiatrists. This fact more than any other has led to the separation and isolation

of the great practicing psychiatrists of the country, the superintendents of our large institutions. Owing to an unfortunate combination of circumstances and to loose political conditions as well as to general popular indifference and ignorance, many of our more prominent "institution officers" were forced to devote themselves rather to problems of administration than to those of clinical study, research and advance. Hence grew up the class of superintendents who have been so prominent before the profession and the legislative public, men who know, or at least can now practice, little medicine or surgery, whatever their qualifications in early life may have been, but who—on the other hand—are excellently adapted to superintend and properly direct the building and heating of their buildings, the buying of coal and groceries, the making up of accounts even to minute details, such as will satisfy the stultifying red tape of State Boards of Estimate, and of looking after the gross external needs of a large institution without knowledge or care of the great medical questions—except of those which, like epidemics, affect their reputation and their cost. And yet after all these men are members of the profession. They are doing a hard and very responsible work into which they have been forced, many of them more or less against their inclination, and are doing it well, often against heavy odds of ignorance, stupidity and incompetence on the part of the politicians and the public. The least that the medical profession can do is to strengthen their hands in all possible ways, and when possible so to lighten their inevitable and unavoidable duties and burdens that they may have from time to time the alleviation of a glance at clinical questions—if, alas! they have not grown too old to have retained any interest in such things.

In conclusion let me attempt to state concisely in a short summary the chief statements or positions taken in this address:—

The neurology of the previous generation is passing away and must pass away. Its passing is not to be regretted; it is the sign and token of progress. The great era of diagnosis and localization has gone. We must now turn to another class of questions—many of them of wider import. Foremost among these problems are to be placed many great subjects of basic importance to the public health. Some of these will be discussed at a special session of this meeting. I need not mention them, as they will suggest themselves at once to each of us. Eugenics

or heredity, the condition and care of the high-grade moron girl, the study of the mentally deficient child in school and in court, the prophylaxis of "nervous breakdown"—to employ the term used by the Legislature of Massachusetts—the effect of worry and its avoidance; the careful and scientific study of these questions are pressing seriously—how seriously I need hardly state.

The enlargement, the widening and deepening of neurology to include psychiatry and its cognate subjects is necessary and is approaching. There are areas of each subject—neurology and psychiatry—which are in part alien each from the other department. This must not retard or obstruct their mutual coöperation and their mutual appreciation of each other's problems. Each needs the other. May this coöperation and appreciation increase year by year.

ALZHEIMER'S DISEASE (SENIUM PRÆCOX): THE REPORT OF A CASE AND REVIEW OF PUBLISHED CASES

By Solomon C. Fuller, M.D.

(*From the Pathological Laboratory, Westborough State Hospital, Westborough, Mass.*)

The first published case presenting the combination of clinical symptoms and microscopical changes discussed in this paper was reported by Alzheimer (1) in 1906. Since then similar observations have been recorded by Bonfiglio (2), Sarteschi (3), Perusini (4), Barrett (5), Alzheimer (6), Bielschowsky (7), Lafora (8), Fuller (9), Betts (10), Schnitzler (11), and Jansens (14).

The case described here is included as an example of Alzheimer's disease in the report on a group of 93 brains examined with reference to origin, diagnostic significance and finer structure of so-called senile or Fischer's plaques. Owing to the variety of psychoses in the earlier communication, the large number of clinical abstracts and the abbreviated manner in which the case was presented, a further report is undertaken. The chief reason, however, for this elaboration and the review of all published cases known to the writer, is furnished by the lively interest shown in the type of mental disorder to which Alzheimer was the first to call attention. The cases from the literature are given below in chronological order, the clinical abstracts in full, and the anatomical findings summarized in the discussion.

While more or less definite mental symptoms and structural alterations are referred to in this paper, the recorded cases are too few—even these showing important variations—to warrant maintaining anything comparable to the paradigm of general paresis. The earlier reports, along with other details mentioned in their microscopical descriptions, emphasize the combination of miliary plaques with a certain basket-like appearance of ganglion cells occasioned by a peculiar alteration of intracellular neurofibrils. But within the present year[1] Alzheimer himself has

[1] 1911.

published a case in which numerous large miliary plaques of the brain were a striking feature, but in which no ganglion cell exhibited the peculiar type of alteration. (*Vide infra* Alzheimer's second case.) The last recorded observations (Schnitzler's case) note the Alzheimer degeneration of ganglion cells, but not a single plaque was found in the many areas of the brain examined. The busy delirium, excitement and confusion which have characterized the clinical course of some of the cases have been wanting in others, their place being taken by an apathetic dementia. The aphasic symptoms and ideational apraxia have also failed in some of the cases. Nevertheless, when this has been said, it must also be said that the clinical and anatomical findings offer a striking similarity. Although the total number of cases is small upon which the conception of this type of mental disorder is based, the assumption of a clinical type or subgroup is not altogether unwarranted. These cases clearly indicate that psychoses occurring in or about the period of senium are a rich field for clinical and anatomical research. The Westborough case is presented as cumulative data toward the isolation of a type which while lacking at present some of the postulates of a disease entity, may yet crystallize into such.

W. S. H., No. 9,378, a man 56 years of age, for some time previous to his final breakdown (about 2 years) had shown a memory defect, short periods of apparent unconsciousness or dream-like states, verbal amnesia and occasional paraphasia, but had been able to continue at work as a laborer on a farm where he had been employed for many years. His sister states that the memory defect had been gradual, and while at first the short periods of confusion (of a few minutes duration), in which he spoke in a paraphasic or senseless manner, were only seldom observed, of late these had become very frequent. Recently, even when there was no apparent mental confusion, he often seemed unable to find the proper word or words to employ in ordinary conversation. He would often search for things which lay directly before him and would use familiar objects incorrectly, (apraxia). Within the last 6 months when he had visited his sister's home, he would relate to her over and over again the same experience within the course of a few minutes, apparently forgetting that he had already done so. On going to bed he would make separate bundles of his clothing, placing one here, another there, in out of the way places, and in the morning could not remember what he had done with his things.

Twenty years ago he had separated from his wife on account

of her infidelity. This affair had worried him quite a little, but he formerly never spoke of it to any one. Of late, however, he constantly referred to his wife in conversation, wondered where she was and whether he had done the proper thing in leaving her. As a result he was slightly depressed. It appears that his wife was certainly at fault while he has always borne a reputation for integrity and industry. He was the father of three children by this union, one of which died in infancy from cerebrospinal meningitis, the others now of age and in good physical and mental health.

About 10 days prior to admission to hospital he had a "mild" attack of influenza with which marked mental symptoms were associated. During this attack he had been very restless, particularly at night, roamed about the house, talked much about his work and went through movements as though employed at his usual daily tasks. Finally he began to tear the bed-clothing, was manifestly disoriented and confused, apparently forgot movements employed in dressing and feeding himself and lost control of bladder and rectal function, or at least performed these latter functions without regard to ordinary rules of decency and tidiness.

The mother of patient died of apoplexy at the age of 61, father at about 65 from an affection of the stomach. No other family history of importance elicited.

On admission to Westborough State Hospital, Jan. 27, 1911, he was in a fairly well nourished condition but looked older than his stated age (56) and presented in his person the appearance of neglect. The gait was rather unsteady but not characteristic of anything more than a general weakness combined with what appeared to be a senile trepidancy; no evidence of paralysis detected. A systolic murmur, best heard at the apex, a full and rapid but regular pulse, firm radial and temporal arteries were present. Respiratory movements were of the costal type, broncho-vesicular breathing and a few râles on right side.

The pupils were slightly irregular in outline but of equal diameter, reacting sluggishly to light, the right more sluggishly than the left. Accommodation tests unsatisfactory owing to lack of proper coöperation. Acuity of vision could not be determined. The patient also failed to coöperate in tests for hearing and for the same reason integrity, or the extent of impairment, of taste, olfactory and tactile sensibility could not be definitely determined. As noted above there were no paralyses, no contractures. Muscular development was fair but rather flabby. Coördination tests were poorly executed; no Romberg; tendon reflexes increased. No history of lues or cerebral insult was obtained. He had used alcohol moderately.

When first seen by examining physician he was very somnolent and could be aroused only with difficulty. Mentally he

was not only dull but apparently indifferent, was disoriented for time, place and persons and was without grasp on his surroundings. Speech reactions were slow, indistinct—often degenerating into a scarcely audible jargon—data frequently incorrect. There was often a logoclonic repetition of the last word of a sentence or last syllable of a word and with fatigue, easily evoked, he became paraphasic. Memory defect was marked for the grossest events of his life, the recent as well as the remote.

Q. What is your name? A. Charles E. G.—. +

Q. What is your age? A. Charles E. G.—.

Q. What is your age? A. Fifty-ty-ty.

Q. How old are you? A. Fifty-six. +

Q. Where were you born? A. Unintelligible muttering, then finally, Watertown.

Q. Where is your home? A. My home was born in Boston I suppose by my mother and her name was Stagpole. (Maiden name of mother was Stackpole.)

Q. Where is your home? A. I have no home but hopple popple home all the time.

Q. Where are you now? A. I know I am from another room as where from another room.

Q. What kind of a place is this? A. Kind of a wooded play. Etc.

He was able to name and indicate the use of objects shown him—pencil, knife, keys, watch.

When given pencil and paper and directed to write his name and address, he grasped the pencil in a proper manner, placed the paper on a hard surface and laboriously made a few marks but did not form a single letter. Questioned whether or not the marks were intended for his name he replied "yes." Repeated attempts were equally futile.

Jan. 28, 1911, the day following admission, he was a little brighter mentally and for a while during the interview with examiners he answered questions readily and in an orderly manner, but he was still disoriented. He could not tell how long in hospital, the nature of the institution, or remember that he had seen one of the examiners on the evening previous. He showed no concern when informed as to the character of the hospital. "Garfield is president" and he had "never heard of Roosevelt." He did not remember how long his wife had been dead (death of wife 2 years ago[1]), at first maintaining that she was still alive. During the interview he frequently exhibited a verbal amnesia and was occasionally paraphasic. He could name objects shown him—bed-room furniture and small articles such as are carried on the person—and execute simple commands but easily became confused with more complex tests, such as: 3 pieces of paper of different sizes of which he was directed to

[1] Statement of patient (incorrect).

tear up the largest, give the middle sized one to examiner and put the other in the pocket of his bath robe. Go to the window, knock on the pane, come back and sit down, etc.

Feb. 3, 1911. Following the last note he was very noisy and restless at night; frequently confused and destroyed the bedclothing.

Feb. 7, 1911. Rapid physical and mental failure; very unsteady on feet; for the 2 days previous he had failed to respond to all questions; remained in bed, constantly disturbing the bedclothing or moving his arms about in a purposeless manner. Frequent unintelligible mutterings; extremely resistive.

Feb. 8, 1911. Pronounced clonic spasms of the left shoulder; clouding of consciousness; labored breathing; difficulty in swallowing; extreme resistance.

Feb. 9, 1911. Death with symptoms of bronchopneumonia. Autopsy 16 hours post mortem.

Anatomical Diagnosis.—Chronic external pachymeningitis, hernia of Pacchionian granulations through the dura, chronic hypertrophic leptomeningitis, pial congestion and moderate pial edema, advanced cerebral arteriosclerosis, regional atrophies of cerebrum (frontal right and left, and temporal left); chronic endocarditis; bronchopneumonia; chronic perihepatitis; chronic perisplenitis; moderate chronic interstitial nephritis.

The brain with pia attached and before sectioning weighed 1,445.8 grams. While within the accepted range of normal weights, focal cerebral atrophies were displayed in the frontal regions and in the left temporo-sphenoidal lobe, atrophies not accounted for by previous hemorrhage, softening gumma or new growth. Section of cerebrum, pons, medulla and cerebellum were negative for coarse focal lesions other than the atrophies mentioned. The larger vessels of the base and many branches of the mesial and convex surfaces of the cerebrum were sclerotic, tortuous and did not collapse on section, besides exhibiting atheromatous patches which imparted a beaded effect. The lining of the ventricles was smooth, the ventricular capacity within normal range, cysts of choroid plexus. The spinal pia was slightly clouded and presented several small osteomata occurring chiefly in the ventral portion of the thoracic distribution of the membrane. The cord shared in the general congestion, other than this offering no gross lesions. The microscopical examination revealed the following:

Mesoblastic Apparatus.—The pia in alcohol-fixed sections stained with toluidin (frontal, precentral, temporal and calcarine regions) shows that the thickening noted macroscopically is due chiefly to a proliferation of connective tissue fibers and fibroblasts, presenting a meshed appearance in which are cells of variable size containing lipoid granules (*Abraumzellen*). The frontal pia presents the greatest number of such cells though

they are by no means scant in the other areas examined. Not infrequently they are found in great numbers in the portion of the membrane immediately adjacent to the cerebrum, but disposed in a single layer which extends for some distance. Infiltrative phenomena, save for an occasional mast cell, fail completely. Hemorrhages of variable size, though never large, are present chiefly in the frontal distribution of the pia; and clear spaces within the thickened membrane, sometimes beneath and lifting the membrane from the cerebrum, are also seen, the result, in all probability, of the edema noted macroscopically. Practically all pial vessels show a proliferation of the adventitia and proliferative as well as regressive alterations of the endothelium, the latter shown by a rich lipoid content of the protoplasm of cells. The blood vessels of the cortex rather generally, but particularly in the frontal areas, are increased, packets and evidence of budding are common and in low power views the richness of the vascular apparatus is at once striking. With high magnifications, aside from the progressive-regressive phenomena in vessels of larger caliber, one encounters large cells with a rich lipoid content of the same general character as those noted in the pia. Such cells are found in the perivascular spaces as well as within the adventitia. There is scarcely a blood vessel in which the protoplasm of endothelial cells is not plainly visible and in which such cells do not show a pigmentation of their protoplasm. In toluidin specimens the pigment or lipoid content mentioned is either unstained, presenting then its natural yellow color or is tinged a greenish or bluish yellow. But in frozen sections stained with scarlet after Herxheimer, these lipoid granules are colored a bright red and because of a like appearance in the majority of ganglion and glia cells, are the most characteristic elements in sections so treated. Occasionally a small cortical vessel presents the appearance of a hyaline degeneration. As in the pia the vessels of the cortex and marrow are without infiltrative phenomena save for an occasional mast cell, and of these not more than a half dozen are encountered in all of the sections mustered.

Glia.—The stellate cells of the molecular layer are increased in number, many showing fairly distinct processes and comparatively abundant protoplasm, even in alcohol sections stained with toluidin blue after Nissl. Their general form, however, is better displayed with Mann's eosin-methylene blue solution, Mallory's phosphomolybdic, Van Gieson's stain after bichromate fixative and also quite well by Bielschowsky's silver aldehyde method, while their lipoid content is best shown by Herxheimer's method. Rod-shaped cells (*Stäbchenzellen*) are quite frequently encountered, particularly in the three outer cortical laminæ but these appear to be of glial origin, not a few of the so-called trabant or satellite cells being of this form. Colonies of proliferating glial

cells, mostly small elements, are seen throughout all the cortical laminæ and in the marrow, but most numerous in the molecular layer and white substance. Glial nuclei are rather generally increased. Cellular gliosis, particularly in the neighborhood of

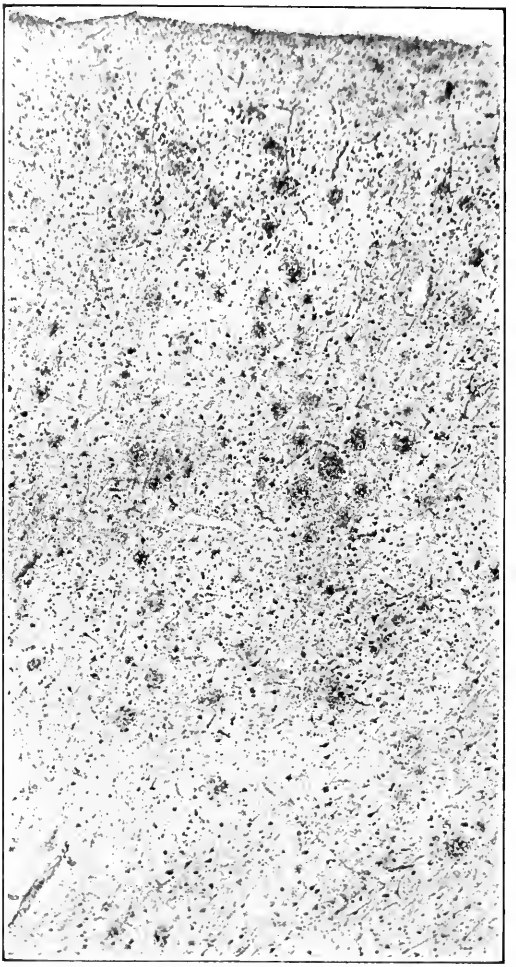

FIG. 1. Right prefrontal cortex showing a rich deposit of plaques.

many blood vessels, is shown by all cell methods, and with Weigert glia fiber stain, also with Mann's stain, a glial fibrillosis in excess of the normal is demonstrated. A striking feature is the absence of any particularly marked satellitosis, indeed, about

many cells showing most advanced degeneration of the Alzheimer type satellites are often wanting. Giant glia cells of the Deiters' variety are conspicuous by their extreme paucity, even in the white substance. The glia "keel" in Weigert preparations

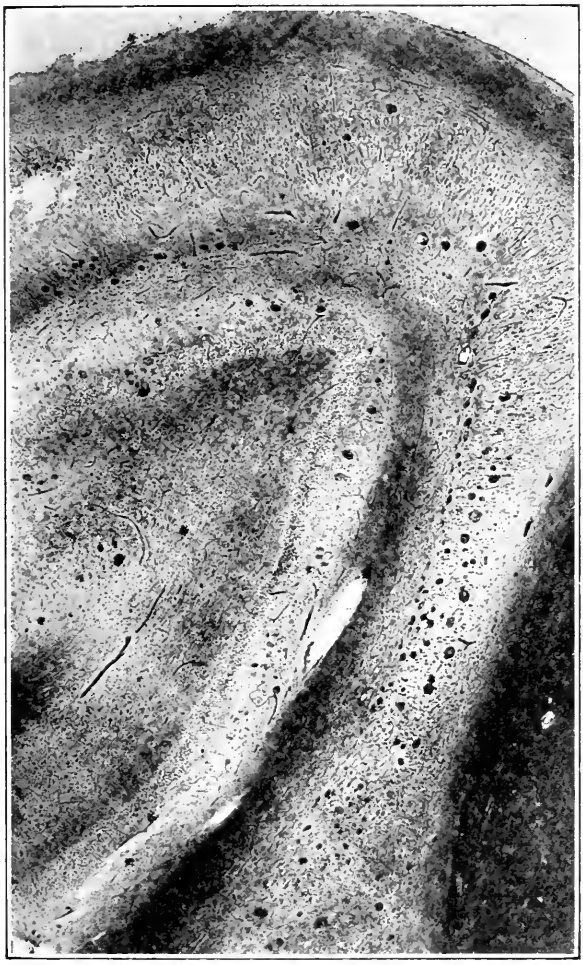

FIG. 2. Left Ammon's horn. More than a hundred plaques may be counted.

is increased in extent and a richer fibrillosis than usual is shown.

Nervous Elements.—Low magnifications of sections stained with toluidin blue, particularly in the prefrontal areas, to a less degree in the other areas examined, reveal a disappearance of ganglion cells, following no definite plan, although perhaps most

pronounced among the smaller pyramidal cells. With the oil immersion, striking features are extreme fuscous degeneration of ganglion cells, not confined to the basilar portion but distributed in many instances throughout the protoplasm including

FIG. 3. Island in plexiform layer of left gyrus hippocampi. All ganglion cells showing Alzheimer degeneration.

such processes as are visible, large vacuoles in cells, atrophic cells, incrustations, extreme tortuosity of apical dendrites and shadow forms. Striking exceptions are the Betz cells of the paracentral lobule and anterior central cortex which for the most part exhibit a fair preservation. The fat content (lipoid substances) of the altered ganglion cells is best shown in Herxheimer sections, in many cells beautifully displayed in the dendrites. With the Bielschowsky silver impregnation method, easily the most characteristic findings are the presence of a great number of plaques of variable size and numerous ganglion cells exhibiting a basket-like alteration—Alzheimer degeneration.

The plaques are also well demonstrated with Mann's solution, fuchsin light-green stain, Van Gieson, though indifferently, toluidin blue on frozen sections, and negatives of them are seen in sections stained by the Wolters-Kultschitzky method for myelin sheaths. With Herxheimer's stain on frozen sections—a

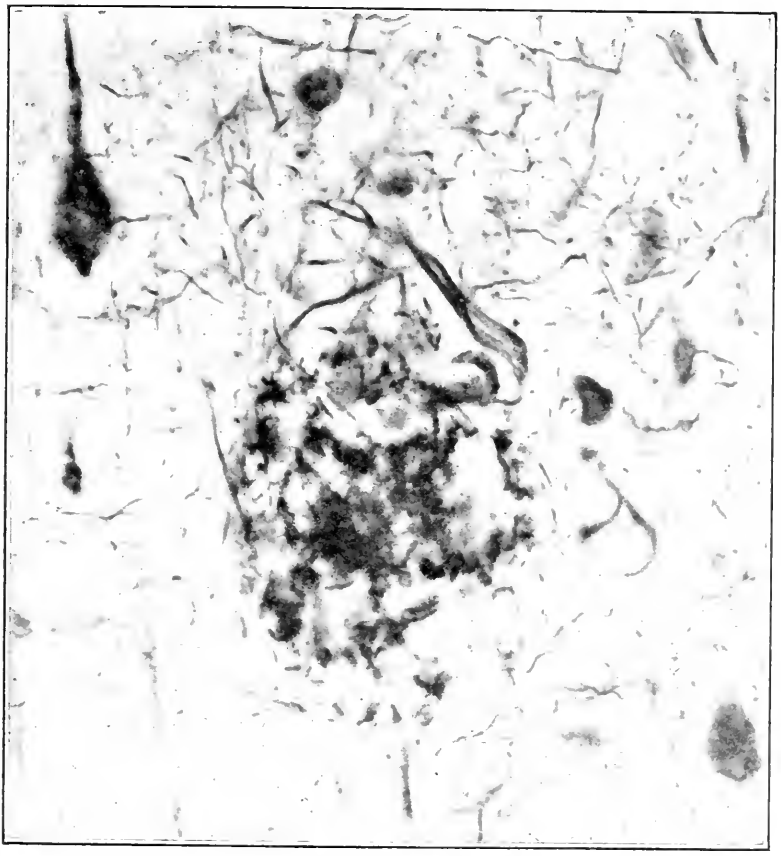

FIG. 4. Typical plaque. Alzheimer degeneration also shown.

method in my hands usually unsuccessful for plaques—not a few of these structures were displayed, the whole plaque stippled throughout with fine red granules, paler and smaller than the lipoid granules in ganglion and glia cells and in cells of the vascular wall already noted. The plaques are distributed without special reference to cortical stratigraphy and are also seen in good number in the marrow stalk of gyri. The greatest richness was exhibited in the frontal, left temporal and hippocampal areas.

These structures were also found in the basal ganglia (lenticular nucleus, thalamus), in the brain stem and in the medulla. In the cerebellum no typical plaques are found but not infrequently with the Bielschowsky method, toluidin blue and in sections stained with Mann's solution, single amyloid bodies or groups of such

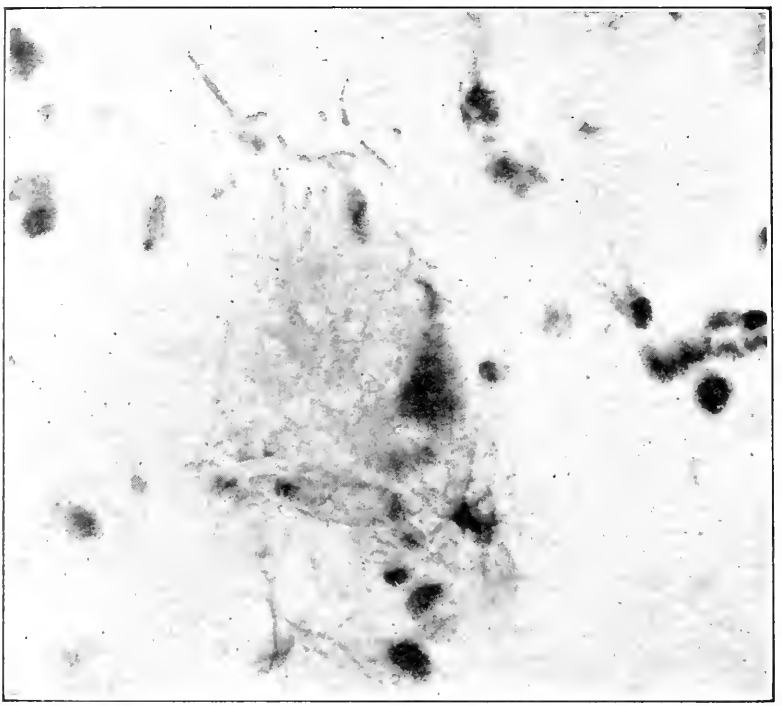

FIG. 5. Glia fibres penetrating plaque. Weigert glia stain.

are found in many foliæ, usually in the molecular, rarely in the granular, layer and white substance, around which a reactive cellular and fibrillary gliosis of a mild degree is shown. In general the number and distribution of plaques correspond with the distribution and intensity of general histological alterations. Since these latter are generally diffused through the brain plaques are also diffused. Recent and old plaques are present, differentiated by glial reactions in their vicinity, and of the same character as I have described elsewhere (9). Very small plaques not much greater in diameter than a large lymphocyte of the blood stream and plaques nearly equalling in diameter the depth

of a cortical lamina were found, and between these extremes all sizes. The rosette form and the radiary actinomycotic shapes were present as well as mixtures of these types, their finer composition such as I have described elsewhere (9).

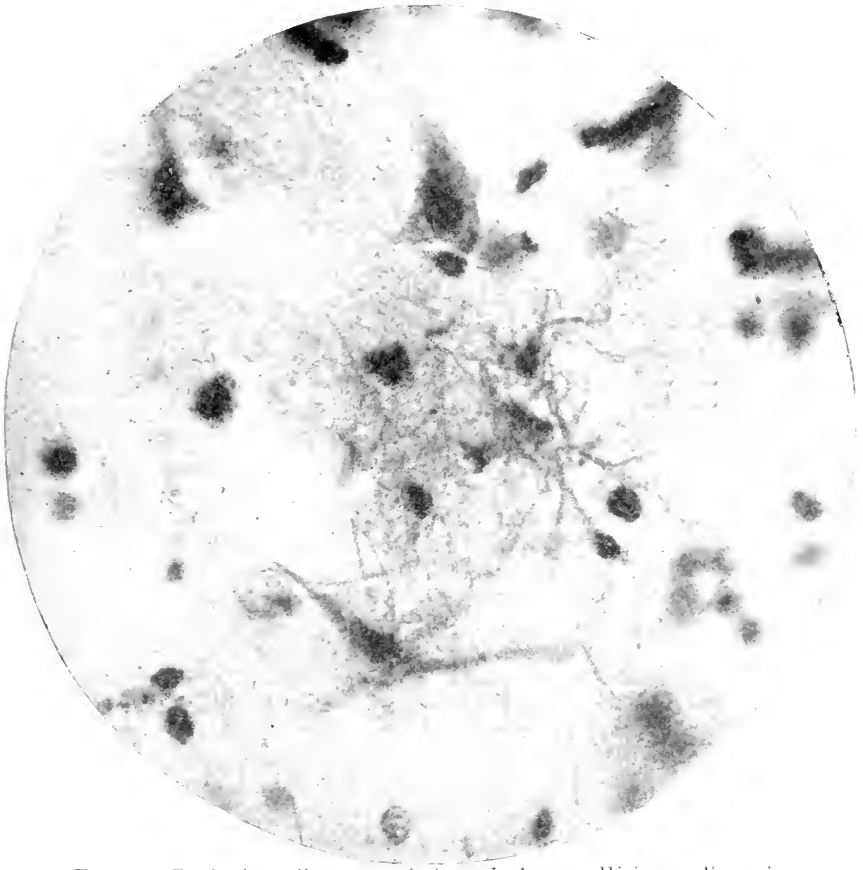

FIG. 5a. Beginning glia encapsulation of plaque. Weigert glia stain.

Many ganglion cells, fully two thirds of those in the frontal sections, all of the ganglion cells in the islands of the plexiform layer of the hippocampal gyri, all of the large pyramidals of Ammon's horn, exhibit the Alzheimer type of degeneration. This degeneration consists of a tangled mass of thick, darkly staining snarls and whirls of the intracellular fibrils, evidences of which are also shown in sections treated with Mann's solution. One sees occasionally in preparations where Alzheimer degenerations are demonstrated, finer fibrils more of the character of normal fibrils which appear to emerge from the thick bundles. Such

pictures suggest the possibility, as Bielschowsky points out, of an incrustation of neurofibrils with foreign stuffs of pathological metabolic origin. Alzheimer had interpreted these coarse fibrils as the result of a welding together of degenerated neurofibrils which had undergone a chemical alteration, staining by other methods not ordinarily displaying neurofibrils. Fischer speaks of these intracellular alterations as coarse-fibered proliferation of the neurofibrils of ganglion cells (*grobfaserige Fibrillenwucherung der Ganglienzellen*).

Résumé.—While data concerning the early history of the case is meager, this may be said: a man of 56 began to show mental symptoms at the age of 54. These were, defective memory, speech disturbances of a sensory character, transitory periods of confusion and a gradually progressive mental weakening, culminating during an attack of influenza in marked mental confusion, ideational apraxia and untidiness in the passage of urine and feces. During a hospital residence of 12 days, somnolency alternating with periods of busy delirium, excitement and speech disturbances of a sensory character, were observed, at the end clonic spasms of shoulder muscles, clouding of consciousness and bronchopneumonia. Unfortunately a Wassermann or Noguchi test was not made, but the later anatomical findings did not indicate previous luetic infection.

At autopsy, regional cerebral atrophies and arteriosclerosis of larger vessels were noted. Microscopically, vessel proliferation, progressive-regressive changes in vessel walls but no infiltrative phenomena, cortical devastations, atrophic and richly pigmented ganglion cells and the presence of so-called Alzheimer degeneration in many such cells, cellular and fibrillary gliosis, the former mostly of small elements, the latter chiefly of delicate caliber, were seen and also numerous miliary plaques in all areas of the cortex, basal ganglia, brain stem and medulla, and marked Alzheimer degeneration. No evidence of cerebral lues or general paresis was present. In short, a clinical and anatomical picture in many respects not unlike the severest form of senile dementia and yet in other ways quite distinctive. The writer considers the case one of Alzheimer's disease (senium præcox) and its similarity to other published observations may be seen in the following cases from the literature:

I

(Alzheimer's first case, also reported as Perusini's Case I, translated from Alzheimer's originally published notes, l. c.)

A woman, 51 years of age, presented as the first most striking mental symptom, ideas of jealousy concerning her husband. Soon after, a rapidly developing mental weakening was noticed; she would lose her way about in her own home, throw things around and hide herself for fear of being killed.

In hospital she seemed perplexed, was disoriented for time and place, occasionally complained that she understood nothing and of an inability to express her thoughts. She frequently greeted the physician as a social caller, making excuses meanwhile that her housework was still unfinished. At other times she would cry out in fear thinking that the physician would cut her or evidence distrust of him, believing that her honor would be assailed. At times she was delirious; tossed the bed-clothing about, called out for her husband and daughter and appeared to have auditory hallucinations. Frequently she shouted loudly for hours at a time.

Whenever she was unable to mentally grasp a situation she would cry out loudly, this, too, whenever an examination was attempted. Only through repeated and patient effort was anything finally obtained from her. Retention (*Merkfähigkeit*) was markedly impaired. When shown objects she named them for the most part correctly, but immediately forgot them. In reading she went from line to line spelling out the words or read without inflection. In writing she repeated many syllables, left out others, but executed the tests rapidly. In speaking she misplaced words—occasional paraphasia—and perseveration was frequent. Many questions asked her were apparently not understood. The gait was undisturbed and use of the hands was equally good. Patellar reflexes were present; the radial arteries firm; no increase in the area of cardiac dullness; no albumin in the urine.

In the further course of the disease the focal symptoms were sometimes more pronounced, sometimes less so, but throughout never intense. The patient finally was completely demented; confined to bed with contractures of the lower extremities; and passed urine and feces involuntarily. In spite of greatest care decubitus developed. Death after a duration of 4½ years.

The autopsy revealed a diffusely atrophied brain without macroscopic focal lesions, the larger cerebral arteries sclerotic.

In sections handled after the Bielschowsky silver impregnation method a striking alteration of the neurofibrils was shown. In an otherwise seemingly normal cell there appears at first one or more fibrils which on account of increased thickness and increased tingibility stand out prominently. In the further course of the alteration many neighboring fibrils are similarly affected. These, then, form thick bundles which gradually come to the surface of the cell. Finally the nucleus and cell disintegrate and only a tangled bundle of fibrils remains to indicate the site of a former ganglion cell.

That these fibrils are colored by other staining methods which do not display neurofibrils indicates a chemical alteration in the fibril substance. This can well be, for the fibrils survive the destruction of the cell. The alterations in the neurofibrils appear

to go hand in hand with a deposition of not yet definitely determined pathological metabolic stuffs. About ¼ to ⅓ of all ganglion cells of the cerebral cortex exhibited this peculiar alteration of the fibrils. Many ganglion cells, particularly in the upper cell laminæ, had disappeared.

Throughout the entire cortex, especially numerous in the outer layers, were found many miliary foci, the result of a deposition of peculiar stuffs in the brain substance. These foci may be recognized without staining, but are very refractory to staining methods.

There was a rich proliferation of glia fibers and many glia cells exhibited large fat sacs. There was no infiltration of the walls of vessels, but proliferative changes of the endothelium were demonstrable and occasionally vessel proliferation was encountered.

II

(Bonfiglio's case, also reported as Perusini's Case IV, translated from the German of Perusini (4).)

Schl. L., a judge's secretary, 63 years old.

A brother was insane. In early life the patient had been a heavy drinker. He had had gonorrhea; in 1870 syphilitic infection and since 1872 had suffered from a spinal affection—sensation of numbness and heaviness in the legs, occasional involuntary passage of urine.

In 1902 he went to hospital on account of his spinal trouble. At that time he looked older than his reported age; the skin of the face and neck was a light grayish blue color (had been treated for a long time with silver nitrate); right pupil larger than the left, pupillary reflexes intact; an old scar on the hard palate; marked disturbance of coördination of upper and lower extremities; impaired muscle sense; Romberg sign. No paresthesias were present. For the most part he was happy and elated and expressed himself in a friendly and orderly manner. Nevertheless, there was a marked memory defect. When left to himself he spoke in a loud tone, his gaze directed at the ceiling or window. He gesticulated freely, laughed and scolded occasionally and stroked his face and hair in a stereotyped manner. He would carry on imaginary conversations with his judge; hold court and condemn the fancied prisoners to death or drive them from the court room. Often he entertained himself in imaginary social gatherings, conversing with acquaintances of his student days. He declared one person a prostitute, protested against the supposed objections of another or made protective movements against fancied threats. He believed it to be summer and that he had been already a half year in hospital. On account of his mental condition he was transferred on the following day to the psychiatric division.

To be added to the physical findings are: diminution of the

strength of the legs and diminished pain sensation in the right leg. He suffered during his residence in hospital quite a little from diarrhea; he smeared himself with feces and was almost constantly hallucinated (auditory).

June 20, 1904, he was transferred to Karthausbrüll unimproved. On admission there the patellar reflexes were noted as diminished, the pupillary reactions sluggish. He romanced freely: he was not a pensioner, an acquaintance was a bishop. He conversed continuously with voices. Marked memory defect; marked disturbance of retention. He could remember nothing of his stay in the Munich hospital, nor anything of his thirty years activity as an official of the court.

Oct. 10, 1904, the patellar reflexes could not be elicited. There were marked disturbance of equilibrium with eyes closed, increasing ataxia and marked euphoria.

March 10, 1905. A fainting attack followed a bath, but from which he quickly recovered.

Dec. 13, 1905. Increasing divergence strabismus.

March 2, 1906. Unable to walk, remains constantly in bed.

April 3, 1906. Purulent catarrhal cystitis.

Aug. 25, 1906. Chatters the day long with voices.

Dec. 31, 1906. Subnormal temperature; pulse barely perceptible.

Jan. 1, 1907. Exitus letalis.

(*To be continued.*)

ANGIO-NEUROTIC EDEMA CURED AFTER THE ADMINISTRATION OF SALVARSAN[1]

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There are four points of interest in the case. First, the immediate cessation of angioneurotic edema after the administration of salvarsan; second, the curative effect of salvarsan on the syphilitic periostitis; third, the fact that the bone disease was entirely refractory to mercury; fourth, the therapeutic puzzle presented to the family physician by the fact that the edematous swellings so frequently followed the use of drugs that he feared the man had an idiosyncrasy to all antisyphilitic medicines. In regard to the third point I wish to say parenthetically that up to the present time my experience has been that salvarsan is most effective in cases of syphilis which do not, though on theoretic grounds they should, improve under mercury.

The patient's history is as follows: He is a man about 48 years old. About eight years ago he had a chancre. Several years ago he began to have periostitis of the tibia which was very resistive to treatment and indeed remained more or less active till after he came to the hospital. In the winter of 1911 he began to suffer with headache, sometimes only at night and always worse at that time, so severe that he had to be given morphia hypodermatically many times. A swelling appeared on the left parietal bone several months after the pain in the head began. There was one spot intensely sore on pressure. He was given mercury and within a few hours his tongue swelled so that it was too large for his mouth and he feared he would choke. He had been given mercury intermittently before over a period of years, but not for some months, and previously had always borne it well. The sequence of the administration of mercury and swelling of the tongue happened many times until finally his physician was afraid to use it. The same thing followed the use of Fowler's solution, by mouth in two and three drop doses, iodid of potassium, and indeed several other drugs.

He was brought to the Orthopedic Hospital and Infirmary for Nervous Diseases on May 30, 1911. He complained bitterly of

[1] Read at the meeting of the Philadelphia Neurological Society, October 27, 1911.

headache, which he localized in the left parietal region. He was taking morphia every night. There were signs of cranial and tibial periostitis. At the first examination of the eyes Dr. Langdon found nothing, at the second, two days before the first injection of salvarsan, he found slight graying of the discs. The urine was normal. The Wassermann and Noguchi tests were positive. The bone disease was syphilitic beyond doubt. I was in a quandary what to do. I felt it would be unjustifiable to give morphine continuously, for soon his last state would be worse than his first. On the other hand he feared if he did not have relief he would go mad, so severe was the nocturnal pain. He needed mercury but, with his history, I was afraid to use it. However, the next day I ordered an inunction of mercury to be given at four-thirty in the afternoon. It was done. At one-thirty the next morning one side of the tongue began to swell and then the other until the mouth could not hold it. My assistant, Dr. William Drayton, was sent for. He found the tongue sticking out of the mouth and greatly swollen. There was but little salivary flow. The gums were not swollen and did not bleed. There was no pain in the tongue or gums. The man was panic stricken and though there was no real dyspnea he feared he would choke to death. His condition was so serious that Dr. Drayton remained with him for several hours. In about six hours the swelling had all gone and he was normal in all regards except the head pain. The swelling decreased rapidly so soon as it began to lessen. I felt sure about the nature of the swelling Dr. Drayton described to me next morning but I left the patient without any specific medication till June third, giving him only morphia at night. I was afraid that he might get an edema of the epiglottis and die suddenly and it would have been well nigh impossible to have convinced his family that mercury had not caused death. On June third, I began hydrarg. bichlor., gr. 1/100 t. d. The first day nothing untoward happened, but on the second day, the left eyelid rapidly swelled, without pain and soon after a localized area like a giant hive appeared on the dorsum of the left foot. Both swellings disappeared after several hours. The mercury was stopped. Next day while I was at the hospital the the right upper lip swelled. By this time I was entirely convinced it was a case of angio-neurotic edema and that mercury had nothing to do with its causation. He continued to have attacks daily or every second day involving at different times the tongue, in which the swelling always began on one side and became bilateral, the scrotum, the eyelids, either forearm or either foot. The ordinary treatment for angio-neurotic edema did no good. The attacks of local edema were as frequent when not taking as when taking mercury and the drug whether given by inunction or by mouth did not help his head pain nor decrease the size of the periosteal swelling in either the head or tibia. Fi-

nally on June 28, he was given an intravenous injection of salvarsan. That night he slept well and without morphia and has needed none since. Within a week all head pain ceased, but it recurred, though only for about a week, and in not severe degree, in August. He was given a second injection and has had no head pain since (October 27, 1911). The periosteal swelling on head and tibia began to decrease a few days after the first injection and now is practically all gone. He has had no edema anywhere since the first injection.

Arsenic is of course a recognized treatment for angio-neurotic edema but in this case, by mouth, it did no good. So far as I know salvarsan has not been used before. I do not wish to be too enthusiastic and mistake after, for because of, but the sequence was so striking that I can not but feel that there was more than coincidence. I am sure that the injection was really curative. Whether syphilis caused the trouble it is impossible to say. I do not think it was in any specific sense causative, because if lues were a cause the affection would be more frequent, since lues itself is one of the commonest diseases and because the vast majority of sufferers are free from lues, but an organic lesion may have mechanically caused disorder of the vasomotor centers just as a nonspecific lesion might have done, not by any specific influence but by its mere pressure. It is impossible to prove that the specific intoxication was not the cause.

Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY

March 5, 1912

The President, Dr. L. Pierce Clark, in the Chair

A CASE OF PROGRESSIVE BULBAR PARALYSIS WITH STUDY OF THE SPEECH DEFECT

By Charles E. Atwood, M.D., and E. W. Scripture, M.D.

The patient was a man who was born in Germany, 65 years ago, and who served in the Franco-Prussian war. He gave a history of lues at the age of 25.

In January, 1910, while carrying a heavy ash-can, he fell, striking on his extended left arm, which remained paretic thereafter. About a month later it was noticed that his speech was defective, like that of a "drunken man."

Examinations by Dr. Atwood showed that the 1st, 2d, 3d, 4th and 6th cranial nerves were apparently normal. There was an impairment of the sense of taste and weakness of the masseters (5th nerve). The 7th nerve was weak in all its branches on both sides, and there was some fibrillation of the muscles about the eyes. The jaw jerk was present. The 8th nerve showed some labyrinthine trouble, probably secondary to otitis media and a thickened drum membrane. Hearing was diminished; the watch was not heard on one side and was barely heard on the other. Bone conduction was lost on both sides.

The 9th, 10th, 11th and 12th nuclei, especially the last three, were notably affected, giving rise to the bulbar symptoms present. Speech was of the bulbar type, and almost unintelligible. There was paralysis of the soft palate; swallowing was difficult, and liquids passed out through the nose. On laryngoscopic examination, mucus passed into the larynx, but the vocal cords approximated on phonation. The patient was unable to whistle or to retain air in the mouth when the cheeks were compressed even slightly. The tongue was soft, atrophic and showed fibrillation, and was protruded imperfectly and with difficulty. There was inability to press the tongue against the roof of the mouth.

General sensation to touch, temperature and pain was everywhere preserved. The reflexes, both deep and superficial, were present and normal. The left triceps jerk was slightly increased. There was no bladder nor anal sphincter involvement. There was some edema of the ankles and a varicose ulcer on the left leg.

Features of especial interest in this case outside of the bulbar symptoms related to parts supplied by the cervical cord enlargement. There was weakness and some atrophy of the left shoulder girdle, with slight involvement of the left upper arm, the ball of the left thumb, and the

left abductor indicis muscle. Muscular fibrillation was detected over the left shoulder girdle and over the back of the left upper arm.

The bulbar symptoms had progressed steadily since the patient first came under observation, and this was especially noticeable in regard to the patient's speech. The history of the case showed that the ventral cervical horns were probably affected simultaneously with the bulbar symptoms. The legs had thus far remained free. The treatment advised had been strychnine in good-sized doses, and the use of semi-solid foods in preference to solids or liquids.

Records of the patient's speech were made on several occasions by the graphic method by Dr. Scripture, and they furnished very exact indications of the patient's condition. The speech showed a marked slowness, due to the excessive effort required to form the sounds. There were also constant modifications in the enunciation of the sounds, due to the weakness of the speech muscles. There was a peculiar rattling in the tone from the larynx, due to weakness of some of the laryngeal muscles. The monotony of the speech was derived from the same cause. There were also peculiar modifications of the sounds, due to sluggishness of muscular action. Some indications of spasticity were found.

A CASE OF AMYOTONIA CONGENITA

By C. C. Beling, M.D., of Newark, N. J.

The speaker presented a boy, born November 20, 1908, at Newark, N. J., who first came under his observation in January of the present year. There was no history of nervous or mental disorders in either branch of the child's family. The mother had been twice married: by her first husband she had one child who was now 19 years of age and in good health. By her second husband she had four children: the first died two hours after birth; the second, four years of age, was healthy and walked at fourteen months. The patient was the third child. The last was sixteen months old, and walked well.

The patient was born at full term without the aid of instruments; it was breast fed for four and a half months, and was then weaned and put on Borden's milk. The child had nursed well, and there was no difficulty in suckling or swallowing. At birth, his feet were said to have been bluish-black in color, and shortly after birth it was noticed that he did not hold his head up like an ordinary child, and that he did not kick nor move his lower limbs, which were flabby and loose. In the dorsal position, the thighs were always abducted and rotated at the hips, and the knees were flexed. He was able to move his hands slightly. He was never known to creep, but always rolled over from one side to the other. At seven months of age his mother made him sit up on a high chair, under the impression that this would strengthen his back and make him walk sooner. No doubt this was largely responsible for the present spinal deformity, as the toneless muscles were unable to support the spinal column. The child began to talk at eighteen months, and there was nothing abnormal in his mental development. With the exception of an attack of bronchitis he had never had convulsions or any other disease.

At the present time the boy was well nourished; height, 46½ inches. When he sat up, there was a kypho-scoliosis of the lumbar and lower dorsal vertebræ, which almost entirely disappeared when he was held up

under the arms. In the sitting posture, the body become bunched up. There was considerable relaxation of the ligaments of the hip and ankle joints, so that the trunk and lower extremities could be placed in various fantastic positions. Extreme hyperextension of the ankle joint could be made, so that the dorsum of the foot lay along the front of the tibia. There was a looseness of all the joints excepting those of the knee, which were held in flexor contraction to a moderate degree. In the dorsal position the lower extremities were abducted and rotated outwards at the hip joints; flexed at the knees, and the soles of both feet were directed inwards and upwards. When the abducted lower limbs, flexed at the knee, were brought into close adduction, the patient was able to hold them in that position for a short time, showing that there was some power in the adductors, but the limbs would soon fall back into their former position. He was able to move the extremities at all the joints. Locomotion was carried on by a process of rolling over from one side to another By this means he went from one room to another all over the house. Recently, he had been making attempts to get on his hands and knees.

Muscular system: There was a generalized loss of muscle tone of varying degrees. Voluntary power was generally preserved, more or less. The muscles were small and weak, and had not the power they should have. The lower extremities were the most deeply involved. There was no fibrillation. There was a strictly symmetrical flaccidity; a weakness, without paralysis. The Wassermann test was negative. The urine was normal; the blood picture was one of mild secondary anemia. The superficial reflexes were present, with the exception of the epigastric, the abdominal and the cremasteric. The plantar reflexes were flexor in type; no Gordon nor Oppenheim. The knee jerk and ankle jerks were absent. Sensation to touch was normal, and while there was an apparent defect of pain sensibility, no complete loss was demonstrable.

The patient showed no demonstrable evidences of involvement of the central nervous system. The characteristic feature was the loss of muscle tone, and a diminution of voluntary power. The condition began congenitally. The question of rickets could be raised, but the early age of onset and the absence of all bony deformity seemed to exclude it as a possible cause. The main feature seemed to be a loss of muscular tone, which might possibly be due to a defect in the sensory mechanism of the muscles or in their reciprocal innervation.

A CASE OF DYSTONIA MUSCULORUM PROGRESSIVA. (OPPENHEIM'S NEW DISEASE)

By C. C. Beling, M.D.

The patient was a girl, born December 10, 1897, in New York City, of Hebrew parents, both of them native of the town of Vilna in Russia. The family history was good. Both the parents were living and well. The patient had two brothers and four sisters who were in normal health. Two children, twins, died soon after birth.

The history of this case, which was then given by Dr. Beling in detail, showed that an insidious disease appeared at the age of seven years in this otherwise normal girl. Its chief feature consisted of a progressive, generalized muscular spasm, of a tractile and torsion-like

character. The disease began in the right foot and exhibited itself as a disturbance of gait, in which hypertonia and spasmodic components were evident. These spasms produced peculiar deformities in the trunk and extremities. The movements were almost always slow, rather stereotyped and not so graceful and rhythmic as those of bilateral athetosis. Occasionally, jerky muscular contractions were observed. The muscular spasms were not under the influence of the will. In the early stages, voluntary movements were not seriously disturbed, but at the present time they were strongly interfered with. Complicated motor acts, such as rising, walking, eating, etc., had been profoundly affected. There had been no diminution in the power of the muscles excepting that produced by the contractures. The movements ceased during sleep. The intellect had been entirely unaffected and the emotional state was normal. Neither suggestion nor hypnosis had had any influence; there were no hysterical stigmata.

Dr. Beling said the disease showed a marked similarity to bilateral athetosis, chronic chorea and degenerative tic. The characteristic participation of the facial muscles, the peculiar grimacing, noted by Lewandowsky, the combination with it of signs of spastic diplegia, which was a frequently associated phenomenon, and the enormous influence of emotional processes seen in bilateral athetosis were lacking in this case.

Dr. Smith Ely Jelliffe thought the Society was very fortunate in having had the opportunity of seeing the two cases shown by Dr. Beling: they were rare cases, and he saw no reason to question the diagnosis in either. The first case was undoubtedly one of amyotonia congenita. It was interesting to note the marked hypotonia and the frog-like attitude assumed by the patient, which was a distinct feature of the disease. Spiller had given the first careful pathological description of this disease, although Oppenheim was the first to describe it. Could the disorder possibly be an intrauterine poliomyelitis. Such a point of view would separate the disorder from the Werdnig-Hoffmann type of atrophy, with which the disorder might be confounded.

Dr. Jelliffe said the second case shown by Dr. Beling was also quite classical. It was quite analogous to three patients whom he had had the opportunity of seeing in Prof. Ziehen's Clinic in 1909. These were exact counterparts of this patient. At a recent meeting of the Society, when Dr. Fraenkel read his paper upon Oppenheim's new disease, Dr. Jelliffe said he had referred to a colored boy who was under his observation at the City Hospital, and in whom the symptoms were such that the differential diagnosis between a double athetosis, a pseudobullar palsy and dystonia musculorum was very difficult. That boy had been shown before this society as an example of Huntington's chorea, which it certainly was not.

The speaker said that through the courtesy of Dr. Flatau, of Breslau, he had the opportunity of showing a number of photographs of a patient suffering from this general type of disorder which well illustrated the contortional phases of the disease. He also showed some photographs of the boy at the City Hospital.

Dr. Jelliffe said that in the discussion of Dr. Fraenkel's paper upon the subject of Oppenheim's dystonia musculorum, he recalled that Dr. Kennedy had said that he regarded these cases of Oppenheim's so-called new disease as being rather ordinary, and as belonging to the tic group. Dr. Jelliffe asked Dr. Kennedy whether he still would maintain his previ-

ously expressed view now that he had seen a patient whose entire course and symptoms agreed so closely with the type which Oppenheim had in view and which he, Dr. Jelliffe, knew from personal experience in both Oppenheim's and Ziehen's Clinics was of the group to which Oppenheim had given the name dystonia musculorum progressiva?

Dr. Foster Kennedy said that during the discussion referred to by Dr. Jelliffe he had defined a tic as a purposive movement retained after the purpose for which it had been undertaken had been lost. As to the case shown by Dr. Beling, the speaker said he did not think it belonged to the tic group, according to the definition or description of that term.

Dr. William M. Leszynsky said that when he showed the first case of this disorder before the Neurological Society about seven or eight years ago, the true condition was not recognized. Now, since the attention of the profession had been called to it by Oppenheim and Fraenkel he supposed that more cases would come to light. It was apparently a form of muscular spasm regarding the pathology of which we were ignorant. Personally, he would not be willing to classify the case just presented as among the tics. It may have shown some evidence of a tic in its onset, but now we had absolute tonicity of the muscles and an absence of the purposeful movements of tic. One characteristic of these cases, which was spoken of by Dr. Beling, was that the spasm disappeared during sleep.

Dr. Richard B. Kruna said that in a disorder of this kind, in which we had tonicity of the muscles, he did not regard the disappearance of the movements during sleep as a very important factor, as we might have a state of hyper- or hypo-tonicity which was really secondary, due to muscle fatigue.

Referring to the case mentioned by Dr. Leszynsky, the speaker said that that patient was now doing farm-work, and was apparently showing signs of improvement.

The President, Dr. Clark, referring to Dr. Beling's case of amyotonia congenita, said that several authors have reported at length upon the occurrence of the flaccid palsies in cerebral diplegics. They cited them as freaks or paradoxical diplegias (Little's type), when a close analysis of many of such supposed cases of agenesis of the pyramidal tracts following in the wake of so-called Little's disease one might find were really cases of amyotonia congenita. At least one needs to scan closely these flaccid types of infantile cerebral diplegia with the aforementioned point in mind.

The same speaker said that, in his Randall's Island service he had seen one case at least which he now knew he should have clinically diagnosticated as dystonia musculorum progressiva instead of bilateral athetosis. He believed this new disorder would ultimately be proven an organic nervous disease.

A CASE OF TRAUMATIC PSYCHOSIS ASSOCIATED WITH AN OLD DEPRESSED FRACTURE OF THE FRONTAL REGION: OPERATION: RECOVERY

By Charles E. Atwood, M.D. and Alfred S. Taylor, M.D.

Dr. Atwood stated that this patient, who had been shown at a meeting of the Society about a year ago, was again presented for the follow-

ing reasons: First, it was a case of a traumatic psychosis which had already been treated for a year and four months and in a private hospital for the insane, without improvement, before it was seen by Dr. Taylor and himself, a conservative attitude with regard to operative interference having been previously adopted and adhered to by the hospital. Second, there was a history of an old, compound fracture of the skull over the right, inferior frontal region, sustained about eleven years prior to the onset of the psychosis. Third, a surgical operation revealed an area of depression of the inner table of the skull at the site of the old injury, corresponding to the right middle and inferior frontal convolutions. Fourth, since the operation for the removal of the depressed bone, *i. e.*, after a period of over a year, the patient had been free from all his symptoms, had lived at home, had resumed his business and had been taken into partnership.

The patient was a man of 50, and single. He had never had lues, but drank to excess until 40. His skull injury was sustained in 1898, and was due to a pistol bullet, which did not produce unconsciousness. The patient was able to walk to a hospital some distance away and had the bullet removed. The record of the hospital was merely, "compound fracture of the skull."

Mental and nervous symptoms did not begin until eleven years after the injury, the patient having been entirely free from alcoholics for seven years previously. These symptoms comprised chiefly pains in the head, insomnia, loss of confidence in himself and of his capacity for employment, fear of being alone and other anxious fears, impulses when alone to jump from the window, mental depression and a general panicky feeling. He lost 40 pounds in weight in six weeks. Attempts to do work increased his symptoms and also developed pains in the back and a feeling of oppression in the chest. At times he would weep and laugh hysterically.

In September, 1909, two months after his head pains and other symptoms began, he went as a voluntary patient to a private hospital for the insane. While there he was much more comfortable, but even a day's visit home developed the symptoms so unbearably that he invariably hurried back to the hospital.

When Dr. Atwood first saw the patient, on December 26, 1910, there was a slight scar and depression of bone over the inferior frontal region, well to the right. There were no objective neurological signs. A Wassermann-Noguchi test proved negative. Mentally, there was some delay and fatigability in the reactions, a moderate degree of depression but also a tendency to "Witzelsucht." The head pains, which he had had for fourteen months, at first occasionally and for a year more persistently, were described as radiating especially upward and backward from the site of the old injury.

An osteoplastic operation was performed by Dr. Taylor on February 3, 1911, and an area of depressed bone about the size of a five-cent piece and twice that thickness was removed with a burr. There was a little softening of brain tissue, where pressure had evidently taken place.

Dr. A. S. Taylor who had performed the operation in the case shown by Dr. Atwood, said the injury in this case was a tangible one, and offered distinct indications for operative interference. The bullet had not penetrated the skull, but had produced a depression of the bone directly over the temporal ridge and extended down to the outer prominence of the supra-orbital ridge. For a year prior to the operation, the

man had insisted that there was something wrong inside of his head, and that he would rather die than continue to suffer.

On turning down the osteoplastic flap, Dr. Taylor discovered a prominence on its inner surface; this was about an inch and a quarter in diameter and had pressed inwards nearly one fourth of an inch. The underlying dura was apparently uninjured, but the area of brain covered by it was distinctly softened. Nothing was done but to close the dura and smooth off the depressed area of bone. The osteoplastic flap was replaced. The patient made an uneventful recovery from the operation, and had been free from all symptoms since.

This case, Dr. Taylor said, emphasized the fact that we should not hesitate to undertake an exploratory operation of this kind when the indications justified it, as the operation itself involved very little risk.

In reply to a question, Dr. Taylor said the exact location of the lesion was in the region of the second and third frontal convolutions, on the right side.

Dr. Kennedy agreed with Dr. Taylor that we should not be too conservative in cases where operative interference gave some promise of proving beneficial. In this instance, the result of the operation certainly justified it; Dr. Taylor was probably strongly influenced by the fact that there were evidences of a distinct injury to the skull, and that the patient insisted that there was something wrong inside his head. If a lesion similar to this one had been located in regions of the skull covering more vulnerable brain areas, it would be questionable whether an exploratory operation would have been advisable in view of the distinct possibility of adding grave symptoms to those already experienced by the patient.

Dr. Jelliffe said the location of the trauma in this case certainly justified Drs. Atwood and Taylor in their course of procedure. Two of the prominent features in the mental history, as he recalled them, were the intense depression and the exaggerated emotivity. If we knew anything at all about the thalamo-cortical sensory tracts disturbances, it was precisely in this region, the second frontal convolution, that one expects to find some evidence of their cortical representation. It seems certain that a large group of the sensory fibers in the sensory path passes from the thalamus to the second frontal and disturbances in this thalamo-cortical path lead to changes in affective reactions similar to those reported in this patient as Head and Holmes have recently most demonstrably pointed out.

Dr. Clark said that during the past three or four years he had seen many cases of idiopathic epilepsy with phases of local onset of the Jacksonian type, and those cases had been operated on largely because of the insistence of the patients or the members of their family, and in spite of the fact that the presence of an organic lesion was rare in these cases. It has been fairly conclusively shown in a large series of cases, particularly by Alexander of Glasgow, that there were edematous regions of the brain which were connected with focal epilepsy. We should therefore bear in mind, Dr. Clark said, the possibility of serious functional and even organic disturbance without a demonstrable organic lesion.

Dr. Atwood said he did not see this patient until after he had spent about fourteen months in the hospital. Then while still an inmate he came to his office for a prognosis and an opinion as to the advisability of operation. He made the suggestion that an explanatory operation should be done, and as the location of the injury was over a silent area of the

brain, he did not see that any harm could come from it. He remained in the hospital for the insane until the operation and went from the general hospital directly home, where he remained. The result of the operation, as shown today, certainly justified it, and the speaker said he would not hesitate to again advise an operation under similar conditions, in spite of the prominence of the mental symptoms.

Dr. Taylor, in closing, said that this man had been struck with a 38-caliber bullet, fired at close range, and the missile had ploughed half way through the skull, so that it was fair to assume that the inner table had been fractured and that it would be depressed. Therefore, the presumption was that there was some organic change inside of the skull. In addition to this, the man complained of severe, constant pain on that side.

Dr. Taylor said he had never seen any disagreeable results from entering the skull in this region on either the left or the right side, and he thought there was no reason to fear the occurrence of aphasia unless there was some slip in the technique.

A CASE OF INJURY TO THE HEAD FOLLOWED BY PERSISTENT PAIN IN THE REGION OF THE SCAR AND WEAKNESS OF THE LEFT LEG: OPERATION: RECOVERY.

By Thomas P. Prout, M.D. and A. S. Taylor, M.D.

The patient was a man of 30 who fourteen year ago was struck over the right side of the skull with an axe, causing a depression of the bone. No special symptoms followed this injury. Two years later he was thrown from a horse, striking on the right side of his head, and following this, he began to complain of pain in the region of the old scar. The pain gradually increased in severity, and four years ago he submitted to an operation in a hospital in Baltimore, where a button of bone was removed from the old scar, and gold foil inserted between the dura and scalp to prevent adhesions.

The patient remained free from pain following this operation until about a year ago, when he again began to suffer from pain in the region of the old scar, and also noticed a feeling of numbness and weakness of the left leg. Two weeks ago he was operated on by Dr. Taylor, and since then he had been entirely free from symptoms. Dr. Taylor was present, and would describe the operation.

Dr. Taylor said that in this case there was a history of pain following an injury that had occurred many years before. There had been a trephine operation four years ago, and with the idea of preventing adhesions, several layers of gold foil had been inserted. These, in the course of time, had become crumpled, producing an irritation, and resulting in the formation of new tissue.

Upon exposing the wound, there was a depression of the scalp an inch in diameter, with adhesions between the dura mater, which was thickened by this combination of gold foil and new connective tissue, and the scalp. A flap of skin with the tissues down to the bone was reflected. The opening through the skull was then enlarged, and the remnants of gold foil, together with the new connective tissue, removed. Underneath the dura the brain was pulsating normally, and its healthy condition was

verified by making an incision through the dura. This was then closed and a celluloid plate inserted, to close the hole in the bone. The scalp was sutured without drainage. The wound healed by primary union, and the symptoms entirely disappeared.

THE RELATION OF MANIC-DEPRESSIVE INSANITY TO INFECTIVE-EXHAUSTIVE PSYCHOSES

By F. Ross Haviland, M.D.

The author stated that his object in presenting this review was to determine whether or not we could discover, in cases which showed essentially manic-depressive symptoms, features which could be attributed to infective-exhaustive influences. Kraepelin described delirium in manic-depressive insanity, for which he gave no infective-exhaustive etiology: on the other hand, he pointed out that in his collapse delirium, manic features were often present, and he called attention to the similarity of these two conditions. The differential diagnosis he made on the fact that collapse delirium followed exhaustive causes and showed more profound apprehension disorder and more lively hallucinations. In his 8th edition, he expressed the opinion that different forms of infective-exhaustive disorders could not be circumscribed from one another nor from other disease pictures, but he felt that further study would enable us to make the distinction.

The question as to whether or not the cases about to be considered differed from true manic attacks, uncomplicated by infective-exhaustive influences, was also to be raised, for upon this, perhaps, depended the prognosis for future attacks.

Dr. Haviland then reported in detail a series of cases where manic states followed some infective disorder, particularly during the puerperium, or after loss of blood or some debilitating physical condition, and in which there appeared to be a delirious admixture. He concluded from a study of these cases that it appeared that aside from delirium with organic features, we might have hallucinatory trends with more or less clouding about which we did not know whether they were endogenous or partial organic deliria. Such trends, or we might say such delirious phases, were evidently apt to occur with an infective-exhaustive etiology. However, they also seemed to come without it, as in dementia præcox and hysteria. Manic states showing essentially manic features, with delirious admixtures referable to an infective-exhaustive etiology, differed obviously in their cause and apparently in their mode of development and duration from manic attacks of unknown etiology.

The initial symptoms of manic depressive insanity were frequently described as being characterized by a tendency for the individual to become unusually strenuous or show some excessive energy, seeking new fields of activity, such excitability being mental as well as motor, but here we find the onset quite different. In all of the cases reported, with perhaps one exception, abrupt mental symptoms were displayed only following a definite exhaustive cause. The duration of the attacks appeared shorter than that which we usually expected to find in manic-depressive insanity, the average duration of nine cases being but five months and six days. It might be noted that the shortest duration of all was in the case showing the most severe infection, namely, puerperal

septicemia. Here the mental upset was of only two months and 25 days duration.

The prognosis in these cases for future attacks was perhaps somewhat better than in cases of manic-depressive insanity of unknown or indefinite etiology, for none of the ten which had been considered had ever had a former attack, only two showed evidences of a manic make-up, and none, up to the present time, had showed evidences of a recurrence.

Dr. A. R. Diefendorf, of New Haven, Conn., said he was not quite clear as to the viewpoint taken by Dr. Haviland: whether he intended to convey the idea that all the delirious phases of the manic states had an infective-exhaustive etiology. In that case, Dr. Diefendorf said, he did not think he could agree with him, because he had seen delirious phases in manic-depressive states alternating with stuporous phases of various degrees.

Dr. Jelliffe said that while listening to Dr. Haviland's paper, he was reminded of a few historical suggestions that seemed to him pertinent to the discussion. About 1886, Kraepelin erected his infectious and toxic group of manic-depressive insanity, and about three years later Krafft-Ebing incorporated these teachings into his well known text-book. This was the first distinct movement that set apart a large number of the then so-called manias into a more or less definite group, with an etiological background behind them. But there still remained a large residue of manias under the older grouping. Then Kraepelin formulated the outlines of the dementia præcox group, and finally, the erection of a fairly clear group of manic types of manic-depressive psychoses. The old group of mania now became split up into separate and fairly definite entities in terms of cause, symptoms, course and termination. When an etiological factor stood out prominently, naturally the case was set apart from the pure manic group of manic-depressive psychosis, and the speaker thought that Dr. Haviland had done well to emphasize some of the factors from the clincal point of view that would separate the toxic-infective type from the manic-depressive. The Wassermann test, for example, had taken quite a number of the acute syphilitic types and passed them over into a realm where a direct therapeutic attack was possible, and it gave us a clear-cut conception of how to treat these cases and expect to get results.

Dr. Jelliffe said he took it for granted that it was more or less the purpose of Dr. Haviland's paper to emphasize the importance of constantly accentuating this gradually narrowing process of differential diagnosis and the insistence on clinical factors, as far as we can get them. In this connection he wished to call attention to the importance of a larger recognition of the blood and urinary findings and other accessory helps that might prove indicative of the particular type of toxic infection or exhaustion—the kind of work that Bruce had devoted so much time and attention to, and which, perhaps, had not proven as attractive to many as other lines of investigation.

Dr. Clark said that Dr. Haviland's paper was in the line of progress, and he thought that investigations in the directions indicated would lead to further disintegration of the manic-depressive group of disorders, and also give us a better idea of the prognosis of these cases, which at present was a very difficult problem. We are not now in a position to say whether or not a recurrence is apt to take place. This phase alone made the subject worthy of a very thorough investigation, as the prognosis exercised an immense influence not only on the life of the patient, but upon the whole family in which these disorders occur as well.

Dr. Haviland, in closing the discussion, replying to Dr. Diefendorf, said that in the cases he had reported, the symptoms occurred in patients who gave a definite infective-exhaustive etiology, but he had not intended to convey the idea that the delirious features could not occur in manic-depressive insanity without such an infective-exhaustive history.

In reply to a question, Dr. Haviland said that in none of the cases he had reported were there any symptoms of eclampsia or the toxemia of pregnancy.

PHILADELPHIA NEUROLOGICAL SOCIETY

FEBRUARY 23, 1912

The President, Dr. JOHN H. W. RHEIN, in the Chair

TRAUMATIC BRACHIAL NEURITIS, PROBABLY CAUSED BY TEARING OFF OF THE NERVE ROOTS

By William G. Spiller, M.D.

The man presented had had a severe injury of each upper limb, especially of the left. One seeing the case casually might say it was one of brachial plexus palsy and pass it over as presenting nothing more of interest. The case was like one reported by Dr. Mills, and later by Dr. C. H. Frazier, in which all the roots of the brachial plexus were evulsed from the spinal cord. The preserved sensation on the inner side of the arm in Dr. Spiller's patient probably was from the integrity of the intercosto-humeral nerve. Preserved sensation and burning pain on the outer side of the upper arm was present also in Dr. Mills' case. The text-books give the supply of this part of the arm as coming from the fifth cervical. Dr. Spiller thought the fourth cervical possibly by irritation might cause radiation of pain beyond the limits assigned to its distribution. Dr. Spiller believed the injury must be very close to the vertebral column or even within it, as the man had sympathetic palsy shown by the narrowing of the palpebral fissure and contraction of the pupil. Dr. Mills' patient complained of having another arm. Dr. Spiller said he could not determine any hallucinations of this character in the case exhibited as he was unable to converse with the man excepting through an interpreter, the man being a Pole.

Dr. Mills' patient had symptoms of implication of the pyramidal tract. Dr. Spiller's patient had mild exaggeration of the tendon reflexes on the left side. A case had been reported by George F. Boyer in the *Proceedings of the Royal Society*, Neurological Section, Nov. 23, 1911, in which examination with microscopical study had shown a grave injury of the cord with evulsion of the seventh cervical root, and damage of the root above and of that below this level.

Dr. Charles K. Mills said that the case Dr. Spiller had shown was very like one which he had at the University Hospital, and which he reported in a paper published in the Pennsylvania State Medical Society's proceedings and also in the *Therapeutic Gazette*. The one which Dr. Mills reported was of interest as probably the first case in which the fact that evulsion of the roots had taken place was actually seen. The

conditions as to loss of sensation and impairment of sensation were much the same in the patient of Dr. Mills as in Dr. Spiller's case. While all the roots were evulsed the loss of sensation was not complete in the distribution of the sensory nerve roots of the plexus; it was complete to the elbow and incomplete above giving a peculiar topography of loss and impairment which is described in Dr. Mills' paper. In explanation of the complete and partial anesthesia and the partial retention of sensation, Dr. Mills thought that one need not fall back upon the idea of a somewhat different distribution for the brachial plexus than is usually given by the anatomist. The explanation which he gave in that paper and which he thought was correct, was that the intercosto-humeral nerve escaped in that case as in this, as did also all the cervical nerves. The explanation seemed to be that of overlap from the intercosto-humeral nerve into the distribution of the brachial plexus supply. This theory of overlap was laid down many years ago by Weir Mitchell, and in recent years by Head and his collaborators. A considerable overlapping of sensory nerves especially as regards protopathic sensibility—sensations of pain, extreme heat and extreme cold—takes place from one peripheral nerve distribution to another adjoining. In the case under discussion a double opportunity for overlap would be present, from the intercosto-humeral below and the lower cervical nerves above.

The retention of power in shrugging the shoulder was effected by the trapezius and perhaps other muscles not in the supply of the brachial plexus.

Dr. Mills said that the "imaginary arm" was a most interesting symptom, as are other imaginary parts or halves of the body in nervous disease or injury. The symptom is not confined to cases in which the injury or disease is purely peripheral. Years ago Dr. Mills had reported a case in which a man who had had a hemorrhage within the dura about the junction of the oblongata and spinal cord was disturbed by a continuous feeling that he was duplicated in the bed in which he was lying. An imaginary arm was present in Dr. Mills's case of brachial root evulsion. The patient referred to this arm as being the seat of tearing, rending pains. Dr. Mills had been consulted about a third root evulsion case in which an imaginary arm was among the symptoms.

Dr. F. X. Dercum said that the Klumpke-Dejerine syndrome is sufficiently infrequent to make it always interesting. In his judgment it, so to speak, clinches the diagnosis in the present case. It seemed to him, also that in part the sensory preservation in the upper portion of the arm is to be explained that probably not all the root fibers were torn out, but that some were preserved. Dr. Dercum, also, thought the interpretation of the sensation of the false arm is that just given by Dr. Mills and is similar to the projection outward by the mind of an arm that has been amputated.

Dr. Spiller recalled a patient in the Philadelphia Hospital who had been both in his service and in that of Dr. Mills. This man, who had a cerebral lesion, believed that another man was in his bed with him.

Dr. C. S. Potts presented an apparently normal man with ankle clonus.

Dr. Charles K. Mills said this was a rather interesting case. It called to his mind the theories of these jerks of the extremities. At one time Dr. Mills had a boy about the age of twelve or fifteen years at irregular periods under his care for several years. He had no knee jerk. He had

a rather peculiar gait. He was practically normal. He is now grown. The interesting thing about this case was that the boy's father and grandfather had no knee jerk. Of course other similar cases are known. Dr. Mills said he did not see why the reverse of lost knee jerk, that is the presence, through inheritance, of foot clonus might not be present. It should be borne in mind that the existence of foot clonus in a normal individual as well as the absence of the knee jerk might be due to mechanical causes such as unusual shortening or lengthening of muscles and tendons.

Dr. Spiller said that some fifteen years ago he had brought before the Society the question of persistent ankle clonus occurring independently of organic disease, and he still believed that ankle clonus is usually but not invariably a sign of organic disease.

Dr. C. S. Potts said of course he had seen ankle clonus in hysteria, especially if induced by traumatism. In these cases however it was not persisent as in the present case and in those with organic disease. He presented the case because it has usually been believed that a persistent ankle clonus indicated organic disease. The case presented had absolutely no evidence of disease of the nervous system either organic or functional, and no signs of hysteria.

Dr. Mills said he still thought that persistent clonus of the type which he had in mind and which he had described was like the Babinski response, practically always a sign of organic disease. Again and again he had seen cases in which it was said not to be a sign of organic disease and the cases proved later to be organic. Of course, there are spastic positions of the limb. Dr. Mills said he could produce ankle clonus in his foot by getting on his toes in a certain position and so it may be done. It is possible there may be some spastic form of hysteria in which there is an abortive and yet no absolutely organic clonus. Dr. Mills said he thought it was a good standing position to take. He had never had any occasion to regret it. He had not anything to say of patellar clonus because he had made no particular observations on it. He would look at the patient long before he would be convinced that double or single persistent foot clonus, unless it was an inherited or congenital condition (as it might be), was hysterical, except a peculiar type of clonus which he had himself spoken of.

Dr. John H. W. Rhein referred to a case of hysteria which he exhibited before the Society a number of years ago, in which there was persistent ankle clonus. As the hysterical symptoms improved the clonus disappeared entirely.

Dr. Charles W. Burr presented a case of congenital ataxia.

Dr. Charles K. Mills said that one thing which interested him in the case presented was the question of the emotional expression, or the lack of normal emotional expression, and for that reason Dr. Weisenburg and he had moving pictures taken of the man with the idea of showing them later at the College of Physicians. This emotional expression was undoubtedly different from that of one not suffering from cerebellar agenesis.

Dr. Burr said there was a great lack of muscle tone in the patient's face. At rest his facial muscles were very flaccid.

A CASE OF BILATERAL FACIAL PARALYSIS OCCURRING IN A SYPHILITIC

By Edward B. Krumbhaar, M.D.

This patient, Robert C., was admitted to the Philadelphia General Hospital on February 6, 1912, complaining of his face being drawn to one side (he doesn't remember which side) and of difficulty in eating on account of the food lodging between his teeth and cheeks.

He is 43 years old, a widower, and a bricklayer by trade. His family history is negative and the only point of interest in his previous medical history is the statement that he had a chancre three months ago, for which he received local treatment only.

Three weeks before admission, with no apparent cause, he awoke early one morning with his face drawn to one side and rather numb on the left. He cried out for help ineffectually and then either went to sleep again or became unconscious, he doesn't know which. When he awoke later his face was still numb and he noticed he could not move it well. He vomited once, but had no more nausea, headache or vertigo. That evening, he found the before-mentioned difficulty in chewing his food, which persisted till after admission to the hospital, so that he became afraid to eat solids. No food or water, however, ever regurgitated through the nose. He also complained of girdle-like pains about the stomach and back, which persisted after the facial palsy was much improved.

On examination, the bilateral facial palsy, evidences of which still remain, was obvious. Then both sides were apparently equally involved; though now, he can close his right eye, while he can hardly move his left eyelids; and wrinkles appear in the right side of his forehead, while the left is quite smooth. He was unable then to show his teeth, or whistle, and in fact presented the typical appearance of a marked bilateral involvement. No other cranial nerves were apparently involved: his eye and tongue movements were good; smell, vision and hearing normal; and no anesthesia in the face or elsewhere could be demonstrated. He had no loss of power elsewhere, no bladder or rectum symptoms. Station and gait were normal. Knee jerks, which on admission were normal, for a few days last week became very much diminished on both sides, but are now returning and about normal. Temperature and respiration are normal; the pulse has varied from 80 to 110. The Wassermann test was positive.

Since admission, he has improved very considerably under mixed treatment of potassium iodide and mercurial inunctions, though for the past week, the improvement has been much less. The girdle pains have also been much less. While Dr. Krumbhaar had purposely not stated that the bilateral palsy was specific, the probabilities are strong that it was luetic in origin. In localizing the lesion, the cortex and peripheral portions of the nerves can be left out of consideration, on account of the bilateral involvement. As the tongue was not affected, the portion of the nerve including the chorda tympani can also be omitted; so that it is most probable that there is a localized meningitis at the points of emergence of the nerves, or a myelitis about the nuclei or both.

Dr. Charles W. Burr thought the interesting thing about the case was its alleged occurrence so soon after a chancre. The man's statements as to his symptoms are not altogether trustworthy. He said that he had a sore three months ago. He also said that he had a sore many years ago. Dr. Burr thought, also, assuming he had a chancre three months ago, that it was much more likely that the facial trouble was due to something else and not to the syphilis, than that the syphilis should go to the nervous system in three months. There have been a number of cases reported of precocious brain syphilis occurring within three or five months, but he did not know personally of any in which the diagnosis had been verified by an autopsy and syphilis disclosed. He was inclined to think that this man had a chancre five or six years ago, and that he did not have a chancre three months ago. If he did have a chancre three months ago Dr. Burr did not think the pathological lesion was syphilitic.

Dr. F. X. Dercum asked Dr. Burr what he considers the lesion in this case to be. If other nerves were involved, one might think of polioencephalitis. In the case presented at the last meeting of the Philadelphia Neurological Society, Dr. Mitchell regarded the symptoms as due to double refrigeration. Dr. Dercum asked whether the lesion in the present case were nuclear, and if so, what was its character. Dr. Dercum said he remembered many years ago having a man under his care who had upon his person the secondary eruption of syphilis and at the same time suffered from a hemiplegia. There was no autopsy in that case and the man's hemiplegia may have been due to some other cause. However, it looked like a precocious case of nervous syphilis.

Dr. Spiller said the symptoms of syphilis of the nervous system with a syphilitic rash still upon the body had been observed by him a few times. One was a case with Brown-Séquard paralysis; another was with hemiplegia. While such cases were not proof of a syphilitic origin they were suggestive.

He had seen facial diplegia of the peripheral type in a person who, according to his statement, had acquired syphilis about two months before the onset of the palsy. This man had no ocular or other cranial nerve symptoms; but had exaggeration of the biceps, patellar and Achilles reflexes and bilateral ankle clonus.

Dr. Potts said he could add one case which from a clinical standpoint would seem to be a case of precocious nerve syphilis. The man came to the dispensary at the University some years ago and Dr. Potts had reported the case. The patient had had a chancre three months before coming there and when examined had the symptom group resembling the so-called Erb's spinal paralysis. He had increased reflexes, a gait of the ataxic paraplegic type, incontinuence of urine but no sensory paralysis. The man made practically a complete recovery, with the aid of mercurial inunctions and iodides. There was no question about his having had a chancre and secondary symptoms within three months of the involvement of the nervous system.

Dr. Burr stated that the facial nerves alone were affected, all the other nerves escaped. He confessed that he did not know of cases, where the facial nucleus alone was affected without at least some involvement of other cranial nerves. It must be very rare. A bilateral neuritis in each of the nerves would be still more rare. A syphilitic basal lesion which would pick out two nerves and let the others escape would be still more

rare. He confessed he did not know what the lesion was. As to the syphilitic origin he did not think because a man had a hemiplegia three months after he had a chancre that the former was therefore syphilitic. He did not think because a man had a secondary syphilitic eruption and hemiplegia we have any right to say that the hemiplegia is syphilitic. He believed inasmuch as we know in the natural history of syphilis, nervous syphilis is a later manifestation, that the burden of proof is on those who say that syphilis early attacks the nervous system. There have been a great many cases reported of alleged nervous syphilis which were precocious. Dr. Burr said he did not know of a single one in which death resulted and at autopsy any syphilitic lesion had been found. He said he would stay on the fence as to believing in precocious nervous syphilis for the present.

Dr. Krumbhaar said in regard to the man he had presented, he had asked him very carefully about the probability of refrigeration as the cause of the palsy and he said that he always slept in a room where the windows were closed and had not been exposed to cold or draughts—on the day before the onset, however, he had been working in a room where one of the window sashes was out. This seemed too recent and too insignificant to be considered in the etiology of this case, so that it looked at the time as if refrigeration could be left out as the cause.

As to a case reported by Taylor in the proceedings of the Royal Society, Dr. Head asked the question whether the involvement of the 7th nerve was ever due to cold. He suggested that Bell's palsy might belong to a large group of nerve lesions arising from conditions very little known, of which herpes zoster was the best known example. He questioned the right to say that cold played any part in the genesis of ordinary facial palsy.

Dr. T. H. Weisenburg read a paper on nervous symptoms following heat exhaustion, with report of a case.

Translations

DREAMS AND MYTHS. A STUDY IN RACE PSYCHOLOGY

By Dr. Karl Abraham

of Berlin

Translated by Dr. William A. White

superintendent of the government hospital for the insane, washington, d. c.

(Continued from p. 413)

The superstitious fear of the snake is surely dependent upon the same idea.[13] We hear, not infrequently, from mentally ill women that they have been attacked by snakes, that they have crawled into their genitals or their mouth. We know that the mouth in this sense is only a substitute for the vulva. (Freud's "Verlegung nach oben." Compare also Riklin's writings already cited.)

Another very popular symbol is the apple which represents the fruitfulness of the woman. Eve seduced Adam with the apple.[14]

The depth of sexual symbolism in man is shown in a very instructive way in the associations experiment. Stimulus words are called out to the subject to which he must react with other words occurring to him. The choice of the reaction word as well as certain signs accompanying the reaction show, in many cases, that the stimulus word has hit upon, through an associative

[13] Compare remarks on p. 58.

[14] One symbol of fruitfulness is the pomegranate evidently on account of its many seeds. It is therefore the attribute of Juno the goddess of wedlock. The poppy-head, rich in seeds, is an attribute of Venus. In one saga Venus changed herself into a carp; the great number of eggs born by the female carp was proverbial in ancient times. In many countries at the time of the wedding the bridal pair are pelted with rice. Similar practices prevail in many places; it signifies the blessing of children. Compare Kleinpaul, "Sprache ohne Worte," p. 27.

path-way, a "complex," existing in the subject, of a sexual nature.[15] The readiness, even of the most innocent words to assimilate to the complex, in the symbolic sense of the complex, is often enormous. This tendency does not at all come into the consciousness of the subject when he answers with the reaction word. In many cases they can themselves explain the dependence of the reaction word on a sexual complex whereby they must overcome a more or less strong inhibition. In other cases a more difficult analytic effort is required on the part of the investigator in order to uncover the connection. Whoever has some experience in the technic of the experiment and psychoanalysis, will find enough evidence in the reaction and the accompanying signs, in order to give his questions the right direction. In the Zürich psychiatric clinic a list of one hundred stimulus words is in use; their use by very many persons has given interesting results relative to the sexual symbolism of the unconscious, which besides, Freud has fully covered by results obtained in other ways.

Some examples might serve to explain. A stimulus word, that calls forth striking psychic phenomena with great regularity is the verb "to plough" (pflügen). As an experimental stimulus word it produces in the subject all those appearances that we have learned to recognize, through experience, as signs of an emotion: Lengthening of the reaction time, failure to understand or repetition of the stimulus word, stuttering in pronouncing the stimulus word, signs of embarrassment, etc. Evidently "to plow" is considered by the subject as a symbolic representation of the sexual act. It is interesting that in Greek and Latin as well as in the Oriental languages "to plow" is used quite generally in this sense.[16] Other stimulus words such as "long" (lang), "mast" (Mast), "needle" (Nadel), "narrow" (eng), "part" (Teil), are with astonishing regularity assimilated in a sexual sense. We take up words, which are commonly used without such association, in a sexual sense. If a strong sexual complex is present this tendency is especially great.

In the face of such facts it appears quite clear to me that symbolism, and especially the sexual, is a common possession

[15] In the work of the Zürich psychiatric clinic (especially in that of Jung "Diagnostischen Assoziationsstudien") the term "complex" is used for a strongly feeling-toned group of ideas, which has the tendency to split off from consciousness and be repressed into the unconscious.

[16] Kleinpaul, "Rätsel der Sprache," p. 130.

of all mankind. The objection, that symbolism, or the significance ascribed to it, exists only in the phantasy of a biased investigator falls down. Kleinpaul[17] expresses his meaning on this point with great precision and exactness: "Symbols are not made, but they are there; they are not invented, but only discovered."[18]

I will not be satisfied to refer to Freud's deductions and the example of a dream analyzed by him, but will give here a fragment of a dream analysis, so far as it is necessary for the explanation of the symbolism; the remaining dream material, for reasons of brevity, I will not consider. The dream, which was told to me by an acquaintance, runs as follows:

"I am alone in a long room. Suddenly I hear a subterranean noise, which does not astonish me, however, as I immediately remember, that from a place below a subterranean canal runs out to the water. I lift up a trap-door in the floor, and immediately a creature appears clothed in a brownish fur that resembled very nearly a seal. It threw off the fur and appeared clearly as my brother, who prayed of me, exhausted and breathless, to give him shelter, as he had run away without permission and swum under water the whole way. I induced him to stretch himself out on a couch in the room, and he fell asleep. A few moments later I heard renewed a much louder noise at the door. My brother sprang up with a cry of terror: they will take me, they will think I have deserted: He slipped on his furs and tried to escape through the subterranean canal, turned about immediately, however, and said: Nothing can be done, they have

[17] Kleinpaul, "Sprache ohne Worte," p. 26.

[18] The critics of Freud disdain to busy themselves seriously with symbols and their nature. Recently, for example, Weygandt ("Kritische Bemerkungen zur Psychologie der Dementia praecox," *Monatsschrift für Psychiatrie und Neurologie*, Bd. 22, 1907) has attempted designedly to attribute the most absurd meaning to the symptoms of a dream state. He believes to have shown thereby the arbitrariness and absurdity of the Freudian method of interpretation. Here the fundamental error of the critic is manifest. It is believed that the symbol is arbitrarily invented, consciously produceable. It follows, however, from Freud's writings that symbolism has its roots in the unconscious. Always then, when the domination of the conscious is wholly or partially abolished—in sleep, in dream states, in states of disturbed attention—repressed ideational material emerges. These ideas appear in disguised form; they avail themselves of symbolism. As Bleuler deduces ("Freudsche Mechanismen in der Symptomatologie der Psychosen," *Psychiatr.-neurol. Wochenschrift*, 1906) symbolism depends upon a lower form of associative activity, which instead of logical connection makes use of vague analogies. Of this sort of associative activity we are not at all capable in times of clear consciousness and alert attention. Symbolism consequently can not be arbitrarily invented.

occupied the passage from here to the water! At this moment the door sprung open and several men rushed in and seized my brother. I cried to them despairingly: he has done nothing, I will plead for him!—At this moment I awoke."

The dreamer had been married for some time and was in the early period of pregnancy. She looks forward to her confinement, not without anxiety. In the evening she had had various things about the development and physiology of the fetus explained to her by her physician. She had already pretty well oriented herself in relation to the whole subject from books but still had some erroneous ideas. She had, for example, not correctly grasped the significance of the waters. Further, she represented to herself the fine fetal hair (lanugo) as thick like that on a young animal.

The canal that leads directly into the water = the birth canal. Water = amniotic fluid. Out of this canal comes a hairy animal like a seal. The seal is a hairy animal that lives in water quite as the fetus lives in the amniotic fluid. This creature, the expected child, appears immediately: quick, easy confinement. It appears as the brother of the dreamer. The brother is, as a matter of fact, considerably younger than the dreamer. After the early death of the mother she had to care for him and stood in a relationship to him that had much of motherliness in it. She still preferably called him the "little one" and both younger children together "the children." The younger brother represented the expected child. She wished for a visit from him (she lived at a considerable distance from her family), so she awaited first the brother, second the child. Here is the second analogy between brother and child. She wished, because of reasons that have no particular interest here, that her brother leave his place of residence. Therefore he has "deserted" his residence in the dream. The place lies on the water; he swims there very often (the third analogy with the fetus!). Also her residence lies on the water. The small room, in which she had the dream, has an outlook upon the water. In the room stands a lounge that can be used as a bed; it serves as a bed when there is a guest who remains over night. She awaited her brother, as such a guest, in this room. A fourth analogy: the room will later become a nursery, the baby will sleep there!

The brother is breathless when he arrives. He has swum

under the water. Also the fetus, when it has left the canal, must struggle for breath. The brother falls to sleep at once like a child soon after its birth.

Now follows a scene in which the brother exhibits a lively anxiety in a situation out of which there is no escape. One such imminent to the dreamer herself is the confinement. This prepares anxiety for her already in advance. In the dream she displaces the anxiety to the fetus by way of the brother representing it. She induces him to lie down because he is so exhausted. After the confinement she will be exhausted and lie down—in the dream she is active and lets the brother lie down. She extends the affair in still another way: The brother is a jurist and must act as an advocate, "plead." This rôle she takes from him, she will plead for him. Therefore she displaces her anxiety on him.

This dream contains symbols which may serve as typical examples. Between a child and a seal, between a subterranean canal and the birth canal there exist only vague analogies. Notwithstanding one is used for the other in the dream. The brother of the dreamer appears in place of the child, although he has been grown up for a long time. For her he is just the little one (der Kleine). The dream makes use by preference of such words which can be understood in different senses.

The wish-fulfilling of this dream is in part evident: The wish for an easy confinement about which it is not necessary to be anxious, and the wish to be able to care for the brother. It is probable that this, not fully and finally interpreted dream, contains still a further concealed wish-fulfillment within itself.

In order to show that certain psychopathological states have the same sort of symbolism I will give only one example. The hallucinations of the mentally deranged whether they continue for many years or only appear transitorily during a dream state, resemble the dream pictures to an extraordinary extent. The analysis shows that it is not simply a superficial similarity.

A little girl when ten years of age was abused by her uncle, a drunkard, in the barn near her parents' house. He had threatened to set the house on fire if she resisted him. Through the intimidation of the threats she yielded to the uncle several times. On one occasion of this sort her mind became disordered, the memory crystallized on the sexual outrage and self-reproach,

which she had on account of her compliance, the real content of the psychosis and which determined the symptoms. She concealed herself behind a sexual symbolism which was throughout in accord with the dream symbolism. From the original account of this case which I have already published[19] I will cite this interesting sentence: The patient suffered for many years with nocturnal visions, she saw especially the burning barn. This vision is plainly doubly determined; the uncle had threatened to start a fire and had abused her in the barn. Besides she had frightful dreams. Once there came a lot of owls; they looked at her sharply, flew at her, tore off her covering and smock and cried: shame on you, you are naked! This is plainly a reminiscence of the outrage. Later in the waking state, she saw hell. The scene which she saw here was strongly sexually colored. She saw "transformed creatures," half animal, half human, as snakes, tigers, owls. There appeared also drunkards who changed into tigers and attacked female animals. In the wish-fulfillments contained in these visions and dreams one recognizes the whole history of the case. Here is sufficient to understand the symbol. Especially interesting is the incorporation of the uncle of the patient in the "transformed creature," which was compounded of the drunkard and the tiger. The drunkenness and beastly roughness of the uncle were united in a symbol. The serpent, in a clearly sexual scene, can have no other meaning than that we have already learned to know. Certain species of animals play a large rôle as sexual symbols in dreams and in the psychoses. One patient I knew, who was very erotic and who suffered from hebephrenia gave the name of "beauty beasts" (Schönheitstiere) to the animals that appeared to her in hallucinations. A euphemism which is still not fully free from the erotic!

Riklin has accumulated excellent examples of this kind from the legends of different peoples. Finally I may refer to the symbolism in the novel of Jensen analyzed by Freud.

IV

Analysis of the Prometheus Saga

Through the most different kinds of human phantasy the same symbolism runs which in a very substantial part is sexual. I

[19] "Über die Bedeutung sexueller Jugendtraumen für die Symptomatologie der Dementia praecox," *Zentralblatt f. Nervenheilk.*, 1907.

turn now to the analysis of the myth. While we will only busy ourselves with the symbolism in its construction it presents still other important analogies with dreams.

According to the view of the Greeks Prometheus created man and then robbed the gods of fire in order to bring it to his creatures. That man was created by a higher being is an idea which we meet among the most varied peoples. Although perfectly familiar to us it is still lacking an explanation. The account of the creator of man as not a true god-head and also not a man who robbed the gods of fire and thus came in conflict with Zeus, is likewise in need of explanation. Kuhn is the founder of comparative mythology; to him the science is indebted for a number of fundamental studies of different mythological figures. It follows from these that certain of the common traditions of the Indogermanic folks are contained in the Indian Vedas in much more original form than they were known from the Greek and other origins. So he succeeded in tracing the figures of Athene, the Centaurs, Orpheus, Wotan, and other gods and heroes of the Greek and Germanic myths, to Vedic origins and thereby has been able to give the true explanation of the sense of the myths. Of greater significance for mythological research is his comprehensive treatise "Über die Herabkunft des Feuers und des Göttertranks" (1859, new edition 1886). His footsteps were forthwith followed by other investigators as Delbrück, Steinthal, Cohen, Roth, Max Müller, Schwarz. I give in the following only the most important results of Kuhn's researches, confining myself moreover to technical grounds preliminarily of the myth of the origin of the fire. I will confine myself in part to the résumé of Kuhn's work which Steinthal[20] has given in a critical review; I have also made use of the general remarks which Cohen[21] has added to Kuhn's deductions. It is naturally not possible in the compass of this presentation, to completely present for the several points of the analysis, the proofs of comparative philology and mythology. In this respect I must refer to the original as well as to the two works of Steinthal and Cohen named.

[20] Steinthal, "Die Prometheussaga in ihrer ursprünglichen Gestalt," *Zeitschrift. f. Völkerpsychologie und Sprachwissenschaft*, Bd. 2, 1862.

[21] Cohen, H., "Mythologische Vorstellungen von Gott und Seele," *Zeitschrift. f. Völkerpsychologie und Sprachwissenschaft*, Bd. 5 u. 6, 1868 u. 1869.

So far the investigations give us the explanation that all Indo-germanic peoples produced fire by rubbing. We can point to this method still in historical times; even the technical expressions belonging to it are known to us. Among people of other races poor in culture we still meet to-day the same procedure. How man came to generate fire through friction may remain uncertain. According to Kuhn nature may have been the teacher of man: he might have observed in the primitive forest, how a dry twig of an ivy, moved by the wind, was rubbed in the hollow of a branch and then broke out in flames. Peschel[22] has already drawn attention to the improbability of this explanation; he thinks that by boring and other mechanical occupations man must have learned to know of the heating of two objects by friction, besides he observed similar occurrences in nature.

[22] Peschel, "Völkerkunde," 6. Aufl., Leipzig, 1885, S. 141.

(*To be continued.*)

Periscope

Revue Neurologique

(Vol. 19, No. 15. Aug. 15, 1911)

1. On Certain Capillary Angiectasis of the Nerve Centers. CLAUDE and MLLE. LOYEZ.
2. Presence in the Connective Tissue of the Iris of Special Pigment Cells. The Influence of the Ultra-violet Rays on the Development of the Pigment of the Iris. RENÉ HORAND.

1. *Capillary Angiectasis.*—There was observed at autopsy on a hemiplegic, a lesion of the pons which, macroscopically, had the appearance of a small hemorrhagic focus but which, on microscopical examination, was shown to be constituted by a telangiectasis of the capillaries. Similar lesions are but rarely mentioned in the literature. The nerve tissue surrounding this area was normal. The patient also had a serous meningitis and an ependymitis.

2. *Special Pigmented Cells in the Iris.*—The eyes of monkeys were exposed to the rays of a mercury vapor lamp, ten exposures, fifteen minutes each. The animals were then killed, and the eyes sectioned after imbedding in paraffine. These sections showed an extraordinary richness of pigment in the iris, and in the connective tissue there were peculiar cells, containing pigment in the protoplasm, which are compared to chromatophores. These cells hypertrophied under the influence of ultra-violet rays, particularly those given off by the mercury vapor lamp. It is probable that these cells play a part in the defence of the organism.

(Vol. 19, No. 16. Aug. 30, 1911)

Proceedings of the Congress of Neurologists and Alienists at Amiens, August 1–8, 1911.

First Report: The Different Kinds of Psychopathic Pain and Their Significance. MAILLARD.

Second Report: Tumors of the Pituitary Body. COURTELLEMONT.

Third Report: On the Value of the Testimony of the Insane. LALANNE.

1. *Psychopathic Pains.*—The term, psychopathic pain, is too vague to be of value in prognosis or in treatment. The diagnosis should be exact. Psychopathic pains are divided into: hallucinatory, paranoic, hysterical, and cenesthopathic. In the hallucinatory pain, the pain is a secondary manifestation due to the hallucination. It is the hallucination which is psychopathic and not the pain. The cenesthopathic pain probably results from the constitutional lack of equilibrium in the nerve centers, but may be arteriosclerotic in origin. Hysterical and paranoic pains are the only true psychopathic pains.

2. *Tumors of the Pituitary Body.*—The author concludes that the biological relation between the symptoms and syndromes of acromegaly, gigantism, infantilism, etc., is evident. The pathogenic mechanism which causes these clinical manifestations remains uncertain except that certain

of the cerebral manifestations are caused by direct compression. The tendency is to attribute acromegaly and gigantism to the hyperfunctioning of the gland and the syndrome of adiposis and infantilism to hypofunction. There is more and more tendency to associate hypophyseal trouble with disturbances of secretion or other glands. This association is especially evident in infantilism and gigantism.

3. *Value of the Testimony of the Insane.*—The value of the testimony of the insane must be determined by the nature of the insanity. It is advised that there should be a collaboration between alienists and magistrates and that, in any case where the testimony of a witness might be questioned on this ground, there should be an examination by an expert.

(Vol. 19, No. 17. September 15, 1911)

1. Syndrome of Brown-Séquard, Following a Wound with a Knife. Babinski, Jarkowski, and Jumentié.
2. Tumors of the Anterior Lobe of the Hypophysis; an Attempt at a Histological Classification. Roussy and Clunet.

1. *Syndrome of Brown-Séquard.*—The patient was examined eight years after receiving a knife wound in the interscapular region on the right side, at about the level of the sixth and seventh thoracic spinous processes. There was found a weakness in the right leg with loss of deep sensibility, sense of motion and vibratory sense. In the left leg there was a loss of sense of heat and cold. There was complete conservation of the capacity for localizing sensation in the right leg which is not in accord with the findings of Förster in a similar case.

2. *Tumors of the Hypophysis.*—Tumors of the hypophysis may be divided into: malformations, epithelial tumors, adenomata, epitheliomata, and transitional types. These are further subdivided according to the nature of the malformation and the character of the cells found. The author agrees with Pierre Marie that all true acromegaly is due to tumor of the hypophysis (the word "tumor" including inflammatory new formations as well). Cases of acromegaly without tumor of the hypophysis are generally cases of pseudo-acromegaly.

C. D. Camp.
(Ann Arbor, Mich.).

Deutsche Zeitschrift für Nervenheilkunde

(Band 42, Heft 5 and 6)

1. Tumors of the Cerebello-pontile Angle. Bregman and Krukowski.
2. Muscular Headaches. Auerbach.
3. Hematomyelia. Gerhardt.
4. Spastic Paraplegia. Newmark.

1. *Tumors.*—The writer gives a clinical report of several cases, some with necropsy. The first case showed symptoms typical of tumor in this area, the involvement of the left trigeminus which occurred in a later stage was explained by the displacement of the pons. Case 4 was interesting in that it showed a secondary metastasis of a carcinoma in both cerebello-pontile angles. The symptoms were rapidly developing deafness, double facial paralysis and cerebellar ataxia.

2. *Headache.*—This article is a refutation of some of the assertions advanced by A. Muller in his article on Muscular Headaches reported in a previous number of this journal.

3. *Hematomyelia.*—This case report with necropsy began with sudden violent pain in the breast, which disappeared shortly and was followed by a flaccid paralysis in the four extremities, with sensory disturbances. At necropsy there was found an angio-glioma in the lower cervical segments and a fresh area of hemorrhage extending to the medulla.

4. *Spastic Paraplegia.*—A further report of a family of spastic paraplegia in which the clinical and pathological features of one of the seven cases were discussed. The spinal cord showed the lesions of a postero-lateral sclerosis. The clinical history of the family was reported in Bd. 27 of this journal.

S. Leopold (Philadelphia).

Allgemeine Zeitschrift f. Psychiatrie

(Band LXVII, Heft 5)

1. The Paresis Question in Algiers. E. Rudin.
2. Psychical Investigations in Typhoid Fever. A. Hendriks.
3. Causes of Death, and Autopsy Findings at the Lübeck Asylum. Dr. Enge.
4. Oxygen Baths in Insanity. Frotscher and Becker.

1. *Paresis in Algiers.*—While the opinion, that without previous syphilis there is no general paresis seems to be held by a great majority of the authorities, especially since the application of the Wassermann reaction and its congeners in psychiatry; that for the syphilitic poison to cause this disease some other factor or factors must be superadded seems equally probable, in view of the fact that there are in the world a number of peoples, among whom though syphilis is exceedingly widespread, paresis is rarely or never seen. Since this situation has been understood to obtain among the native population of Algeria the author devoted a vacation of seven weeks early in 1909 to travel in this country and investigation of conditions upon the spot, besides visiting some of the asylums in the south of France where natives of the French African Provinces are cared for. He was able to see personally only two cases of general paresis among natives, one a male, a guide, at Bougie and one a female, an Arab prostitute, at Aix. While in the large cities of Germany it is estimated that about 10 per cent. of the inhabitants are syphilitic and of these from 1 to 3 per cent. later develop paresis, in Algiers it is estimated that from 60 to 100 per cent. of the population has had syphilis. Diligent search throughout the city of Algiers, a place of 20,000 inhabitants and inquiry from physicians speaking Arabic, familiar with the people and in their confidence, failed to show one case of general paresis in a native Algerian. Among the Jews and the French and others settled in the country the disease is common enough. Sending a circular letter to a large number of physicians practicing in various parts of the country near and remote, brought answers chiefly denying the existence of paresis in their experience but among these answers there were five positive replies, one which was investigated personally by the author proving to be a case of wrong diagnosis. Two other observers spoke of seeing several cases of general paresis but gave no details. Another physician gave positive details with regard to two cases which would seem to have been undoubted examples of paresis. A fifth practitioner reported having seen four cases of the

disease among natives, during a practice of 11 years. One of these cases later died at Villejuif and an autopsy confirmed the diagnosis of general paresis. Considering the situation from the point of view of finding what factor or factors besides syphilis are necessary to produce general paresis, the author finds little that is positive. Alcoholism, often accused of being a contributing cause, is common enough among certain classes of the population in Algeria, as are also privation and want. He is forced to fall back mainly upon the idea that the intellectual activity and unrest of the more cultured nations while increasing the functional activity of the nervous system, increases also its susceptibility to morbid influences, especially to the degenerative effect of the syphilitic virus. In other words the dictum of Krafft-Ebing that general paresis is a disease not only of syphilization but of civilization is correct. It is well known that animals removed from the wild state to conditions, to them more or less artificial, develop an increased susceptibility to certain diseases. The author suggests that something of the same sort may be the case with man and that this may explain the comparative immunity of races living nearer primitive conditions to certain diseases of the nervous system. Since the lesions of general paresis are most developed in the frontal lobes, which are phylogenetically the latest acquisition, he wonders if the more delicate organization of this portion of the brain in the more intellectual races may not have something to do with increased susceptibility to general paresis.

2. *Psychical Investigations in Typhoid Fever.*—The author without giving the clinical histories, presents a résumé of the psychical conditions found in twenty-four typhoid patients whom he examined. He used ordinary observation, association tests, reckoning exercises and Heibronner's picture method. In every case voluntary muscular power is greatly reduced. Hyperkinesis as evidenced by desire to get out of bed and toward convalescence by tendency to talk constantly is observed in some cases. Of great importance is the increased fatigability; the slightest effort giving rise to signs of exhaustion. In severe cases sleep is almost always disturbed. Uncleanness and retention, often observed, are probably connected with dulling of the consciousness. The symptoms observed in the sensory and sensible spheres have been often described and into these the author does not enter, as he says he can present nothing new. In two juvenile patients he observed the "Pressure-visions" described by Liepman as occurring in alcoholics when pressure is made over the eyeball. The affective condition shows in typhoid patients great liability, weeping occurs easily and in convalescence a certain abandon with euphoria and slight talkativeness is not infrequently observed. Power of attention, as measured by the tuning fork test, is nearly always diminished. Tests by Heilbronner's pictures showed in part of the patients little diminution of discriminative power, less than would be expected. In the delirious subjects, however, there was reduction of discriminative power. Even without any special testing, it was easy enough to observe that attention is much more easily attracted than has generally been supposed. Distractibility was little noticed. Paraphasic symptoms were occasionally found. Power of recognition, either of visual or of auditory impressions seems generally good. Ability to comprehend, seems in general little or not at all disturbed in typhoid patients. The power of receiving and retaining impressions ("Merkfähigkeit") shows perhaps some diminution during the period of greatest psychical disturbance, otherwise there is little difference in this regard between typhoid patients and normal individuals. In asso-

ciation testing there was observed a tendency to narrow down the number of new words used in reply to the stimulus words, while in the progressive method the number of words given in succession tended to be considerably below that given by normal individuals. The tendency to association by sound (Klangassociationen) observed by Aschaffenburg in exhaustion psychoses was not found among typhoid patients. Association time was somewhat lengthened as compared to that in normal subjects. In multiplication exercises there were more mistakes than normal. Orientation was much less disturbed than might be supposed though there was frequently some uncertainty as to time.

3. *Causes of Death.*—A statistical inquiry based upon the number of deaths occurring in a material of 1,106 patients cared for at the Lübeck Asylum from 1893 to 1908, with the results of autopsy in all but three cases. The deaths during the period in consideration numbered 248, 145 men, 103 women. Among the 248 patients who died, the mental disease was general paresis in 89, epilepsy in 10, imbecility or idiocy in 6, delirium tremens in 3, and in the remaining 140 what the author classes as "simple mental disease" under which classification he includes manic-depressive, dementia præcox, paranoia and everything else. The highest mortality was between the ages of 40 and 60 years, chiefly on account of the greater number of paretics in these years. Under the lethal diseases, the first place is occupied by bronchopneumonia, the second by tuberculosis, the third by general paresis. 15.32 per cent. of all the deaths was due to tuberculosis. Malignant tumors gave a death percentage of 4.43. Of the ten epileptics who died, only two perished in status epilepticus. Besides general paresis there were 7.25 per cent. of all the deaths from diseases of the brain and its membranes. Diseases of the nervous system inclusive of epilepsy and general paresis caused 18.95 per cent. of all the deaths. Exclusive of tuberculosis 34.37 per cent. died of diseases of the respiratory organs. 12.09 per cent. of the deaths were due to diseases of the circulatory system, while only one individual died of a disease of the digestive system and 1.21 per cent. died respectively of nephritis and through suicide. In 14 cases the cause of death was not made out. While in general medicine the anatomical findings after death are usually relied upon to confirm the diagnosis this relationship is much less close in psychiatry. Among the 248 deaths, in 88 no gross anatomical alterations were noted. Among the alterations found changes in the membranes of the brain were the most frequent, those of the dura mater preponderating. There is hardly any sort of psychosis in which meningeal changes are not found. Most constant and regular were the changes in general paresis. These changes were pachymeningitis externa et interna, leptomeningitis, hydrocephalus externus et internus, ependymitis granularis, atrophy, encephalomalacia, atheroma vasorum. There were quite similar findings in the cases of senile dementia. In one case of idiocy there was aplasia of the frontal lobe and general microgyria, in another, multiple porencephaly. The remaining changes observed were mainly accidentally associated with the insanity. The author tabulates the great number of changes found in other organs. Looking over the list he has received the impression that mental diseases to a considerable extent favor the development of disease in other organs besides the brain.

4. *Oxygen Baths in Insanity.*—The authors tested the sedative and hypnotic effect claimed for the Sarason "Ozet Baths" upon a material of 18 patients presenting different psychoses, after testing them upon

themselves and upon an elderly lady troubled with insomnia from a poorly compensated mitral lesion. They find them of very decided sedative effect in the milder cases of excitement and restlessness such as usually yield to moderate doses of paraldehyde or chloral. Their action seems especially favorable in heart cases where compensation is not too far broken and which are combined with psychical disturbance. The high cost of 2.5 M. ($0.62) per bath is however practically prohibitive in public hospitals and in the poorer class of practice.

(Band LXVII, Heft 6)

1. Statistical Investigations on Jail Psychoses. KURT WILLIAMS.
2. Contributions to the Subject of Imperative Hallucinations. N. SKLIER.
3. The Simulation of Insanity. SCHUETTE.
4. Experimental Investigations on Healthy Persons and on Subjects of Traumatic Neuroses by the Method of Reckoning Exercises in Continuous Addition.

1. *Jail Psychoses.*—The author investigated the psychoses of the insane prisoners received at the Bonn Asylum from 1904 to 1909—232 in number, from which figure he deducted twelve cases on account of not being able to obtain sufficient data with regard to them. The 220 cases considered, he divides into six groups, (I) Those already insane when arrested, 14 cases. (II) Those sent to the Asylum for observation as to their mental condition, 78 cases. (III) Cases of insanity developing in jail but not differing in clinical picture from that usual in such cases, 18 cases. (IV) Cases of insanity whose clinical picture was influenced by the imprisonment, 39 cases. (V) Prison psychoses arising upon a basis of degeneration, 30 cases. (VI) Persons previously sound who suffered from prison psychoses, 41 cases. It is noteworthy that the total number is equally divided between cases which were evidently not due to imprisonment and those in which this presumably played a rôle. Since the first group furnishes no information as to prison psychoses, the author limits his consideration almost exclusively to the last three. The 39 cases of group IV were made up of 8 imbeciles, 14 precocious dements, 1 chronic alcoholic and 16 epileptics. Excluding the single alcoholic, the modifying symptoms were of two kinds, stuporous and paranoid. The stuporous symptom-complex occurred especially in those kept in collective confinement (17 collective to 6 in solitary confinement), while for the paranoid symptom-complex the opposite was the case (8 cases solitary to 1 of collective confinement). Group V, psychoses developing upon a basis of degeneration during imprisonment, was divisible again into the stuporous and paranoid groups containing 16 and 14 cases respectively. Here also the stuporous cases preponderated in collective, the paranoid in solitary confinement, in the proportion of nearly two to one. The stupor usually begins suddenly with a period of violence and aggressiveness, which soon passes into a condition of entire loss of reactiveness, the patient lies with open, expressionless eyes and does not speak. There is mainly reduction of sensibility, the pulse is usually rapid (to 120) and there is often Romberg's symptom, increased reflexes and fibrillary contractions of the tongue. There is usually disorientation for time and place due to an amnesia beginning with the moment of excitement and slowly improving. After a period varying from one day to ten months

the patient by degrees clears up mentally and the physical symptoms recede. The last residues are often headache and some concentric narrowing of the visual field. The paranoid symptoms also begin as a rule with a period of excitement and destructiveness after which there develop ideas of persecution, delusions of grandeur and there is entire disorientation as to person. The VI group contains stuporous and paranoid forms with Ganser's symptom-complex as an intermediate link. There were 18 stuporous, 6 Ganser, and 16 paranoid cases. The author concludes that the material considered is hardly sufficiently large to justify the assumption that there is any special prison psychosis, although this seems probable. It would appear however that there are two forms of prison psychosis, par excellence, the stuporous developing especially in those undergoing collective confinement, the paranoid form in those in solitude. As exciting causes, trial, the shock of some bad news, punishment, etc., seem sometimes to play a rôle. In general the prognosis of these disturbances is not unfavorable, though the time needed for recovery varies very greatly.

2. *Imperative Hallucinations.*—Hallucinations in which imperative phenomena play a part have been divided into (1) hallucinatory obsessions, that is imperative conceptions or obsessions in connection with which there are hallucinations, and (2) imperative hallucination proper or obsessive hallucinations, in which the hallucination itself is the primary and obsessive element. In most of the cases of this kind reported the phenomena observed have belonged rather to the class of hallucinatory obsessions. The author reports three cases—all women of strong neuropathic constitution—in whom obsessive hallucinations were a feature. In the first case the subject, who had had a number of other imperative phenomena, had dabbled somewhat in spiritualism, and was superstitious with strong religious scruples, was plagued from time to time by certain black figures (or shades) which would appear and sit on, or by the side of, her bed and terrified and distressed her very much. At other times she saw faces and shapes on the wall, which she could cause to disappear by asking certain questions or if it was in the dark by turning up the light.

She does not appear to have at any time been of the opinion that these shapes were real and they always took on a phantastic and uncertain character. Nevertheless they annoyed her greatly and she was inclined to consider them as warnings from the other world. The second patient, also of neuropathic history, although clear and well oriented, was greatly distressed by certain questions and replies mainly of blasphemous nature which would suddenly obtrude themselves upon her sense of hearing. These seem to have had their origin in violent quarrels with her stepfather, who often abused her. They were accompanied by the same feeling of compulsion and absence of affective element as in the previous case. The third patient, who seems to have been always nervous and to have had an aversion to men, as a result of being annoyed by the importunities of a man greatly her senior whom her brother wished her to marry, developed a condition of restlessness and anxiety accompanied by a vast number of hallucinations, of sight, of hearing and of common sensation, in which the hated suitor played an important part. While this case does not appear to the author so clearly one of imperative hallucinations as the two others, there was nevertheless a certain unclearness and lack of belief in the hallucinations which inclines him to class it with the others.

3. *Simulation of Insanity.*—A discussion of the cases of three men all showing signs of degeneracy who came under scrutiny after the commission of criminal acts and of the grounds upon which they were decided to be sane and responsible.

4. *Experimental Investigations.*—The author examined a series of 12 healthy persons (mainly attendants and employees) and 15 cases of traumatic neuroses by Specht's modification of Kraepelin's method of continuous additions, and exposes his results in a series of curves. He comes to the following conclusions: (1) The Kraepelin-Specht method of continuous additions is well suited for the investigation of mental fatigability in healthy persons. (2) In traumatic neuroses it is not so generally applicable and fails in a number of cases since the absolute ability of the subject is too much reduced. (3) The subjects of trauma even when they presented only slight nervous symptoms were greatly influenced in their reckoning ability. (4) The fatigability of the traumatic cases in no instance exceeded that of the healthy persons. (5) In the subjects of trauma so far as was shown by the methods used, reckoning ability improved on practice as much as in healthy persons. (6) The limited reckoning ability in traumatic cases must be referred to disturbances in the sphere of the will. In many cases psychical inhibition was very marked. (7) Simulation can be made manifest by the Specht method even when the absolute reckoning ability remains low. (8) The results obtained by these experiments indicate that lowered mental productiveness in traumatic cases is not due to deception but to great psychical inhibition. (9) These experiments point to important differences between the inhibition in traumatic cases and that in manic-depressive insanity. (10) It is concluded that the inhibition in traumatic cases is due to a conception by the patients of their own incompetency and is on a par with other hysterical disturbances.

C. L. Allen (Los Angeles).

Journal die Psychologie normale et pathologique

(Eighth Year, No. 5. Sept.–Oct., 1911)

1. Objective Studies upon the Evolution of Design in the Child. W. Bechterew.
2. The Delirium of Interpretation. Dr. Gabriel Dromard.
3. Psychophysiology of Hunger. Ramon Turró.

1. *Objective Studies upon the Evolution of Design in the Child.*—In this profusely illustrated article Bechterew shows that the pictorial art of the earlier ages of the individual, as well as of the race, indicates a regular and systematic advance from the more simple to the more complex in mentalization. From a few symbolical lines to the full picture, with its careful coordination of parts and perspective, the process is psychologically always the same. Indeed the progress of the growth of a child's analytical and synthetical powers can be beautifully and accurately traced in the series of drawings and sketches that it makes in the course of its early years.

2. *The Delirium of Interpretation.*—This syndrome indicates a degenerative psychosis. It represents a psychical reversion to simpler and more primitive modes of thought. In this essay the author develops this thesis with much detail and abundant illustration.

3. *Psychophysiology of Hunger.*—This is another elaborate study in normal psychology—too elaborate for a satisfactory abstract.

(No. 6. Nov.-Dec., 1911)

1. Mental Contagion. G. DUMAS.
2. The Hysterical Mentality. ALBERT LECLERE.

1. *Mental Contagion.*—Dumas says that the subject of mental contagion among the insane has never been adequately handled by any writer upon psychiatry. The problem he sets before himself is that of the substitution of one disease for another, one psychosis for another, by the association of patients with entirely different types of insanity. Most obviously such a substitution would be impossible in those psychoses, dependent upon disturbances of evolution and involution, upon lesions of a trophic character and upon traumatic and degenerative conditions of the nervous centers. Even in those maladies which, rightly or wrongly, are looked upon as idiopathic psychoses like the interpretative psychoses, mania and melancholia, one never speaks of a substitution, in the true sense of the word, of one disease for the other. Hence the author objects to the term *transferred insanity* so commonly used to indicate mental contagion among the insane. As a result of a close study of the conversations and their results among the insane—many of which conversations make up the bulk of the author's essay—Dumas concludes: (1) That there is no mental contagion among the systematic psychoses; (2) that the contagious influence of certain systematics, and especially of excited maniacs, upon the merely enfeebled is undoubted; (3) that the communication of delirious ideas among melancholics or among excited maniacs artificially grouped together is definite and transitory.

2. *The Hysterical Mentality.*—The conclusion of this very long and polemical article, in which all the prominent theories as to the mental state of a hysteric are passed in review, is that there is in the patient an exalted degree of *impressionability* and that this is due, undoubtedly, to a *functional weakness* in the nervous system wherein the mentality has its being. This functional weakness corresponds to the underlying *defects of structure* which in a measure are difficult to define. In the provocation of the trouble intoxication plays a preponderant rôle, first as cause then as effect and cause together.

METTLER (Chicago).

Archiv für Psychiatrie und Nervenkrankheiten

(Vol. 49, No. 1, 1912)

I. Diagnosis of Tumors of the Fourth Ventricle and of Idiopathic Hydrocephalus, with a Consideration of Brain Puncture. K. BONHOEFFER
II. The Psychiatric Estimate of Sexual Delinquency. RAECKE.
III. Cerebral Paralysis with Intact Pyramidal Tract. ERNST HOESTERMANN.
IV. Congenital Disease of the Cerebrellum, with a Contribution to the Development of the Cerebellum. H. VOGT and M. ASTWAZATUROW.
V. Pellagra. A. D. KOZOWSKY.
VI. Brain Weight and Psychoses. SCHARPFF.
VII. The Psychology of Sense Falsification. A. FAUSER.

VIII. Statistics and Symptomatology of the Mental Disturbances occurring in the Navy, especially Catatonia, Pathological Intoxication, Imbecility, and their Legal Determination. AUER.

I. *Diagnosis of Tumors.*—Bonhoeffer calls attention to the difficulty in the diagnosis of new growths of the cerebellum through the fact that any disturbance under the tentorium may cause cerebellar symptoms; as, for example, that observed in well-marked internal hydrocephalus. Cases are cited in detail for the purpose of pointing out the difficulties in the diagnosis. In three cases, the disease developed under conditions of marked general cerebral symptoms. Two cases are quoted of idiopathic hydrocephalus also bringing up difficulties in diagnosis. The autopsy in both of these cases showed the presence of hydrocephalus but without an anatomical cause for its existence. In these cases lumbar puncture was carried out, and this the author regards as a harmless procedure in conditions of the sort described. He is of the opinion that in certain cases it is of value as a therapeutic procedure. He is sceptical regarding the general practice of puncture of the ventricle, although it may be indicated in certain cases of doubtful diagnosis, particularly if it seems not desirable to proceed at once to trephining. A further case of idiopathic hydrocephalus is added to this article as a postscript.

II. *Sexual Delinquency.*—Raecke calls attention to the great interest which various sexual perversions and like conditions have recently excited, and feels that the time has come for a careful review of our knowledge on the basis of careful scientific investigation. He is wholly opposed to popular writings on sexual pathological questions. Various types of so-called perversions are stated and discussed from the clinical standpoint, with the introduction of cases. The general conclusions of the article are that only a well-grounded knowledge of clinical psychiatry, rather than the propounding of vague hypotheses, permits the medical expert to arrive at a correct estimation and judgment of sexual delinquency.

III. *Cerebral Paralysis.*—Hoestermann discusses the interesting fact that certain cases of hemiplegia exist in spite of an entirely intact pyramidal tract, the cause of which is to be sought in early injury to the brain cortex, particularly in the anterior central convolution. In this region of the brain, atypical cell formations may be found from which it is assumed that under certain conditions normal motor impulses may not flow from these cells, although they are still capable of maintaining their axones intact. Although the cases observed—largely in children—are not anatomically identical, they have for the most part much in common. It is concluded more in detail from this study that, although there may clinically be a paralysis, anatomically there is an entirely intact pyramidal tract associated with atrophy of a part of the cortex with, however, normal giant pyramidal cells. A case reported by Marie and Guillain is quoted as bearing out this fact. A case of Binswanger described a paralysis, intact pyramidal tract, with a loss of the giant pyramidal cells; whereas Bing alludes to a case of Friedreich's disease in which, in spite of the fact that there was no paralysis, the pyramidal tracts showed sclerosis. In still another case, Rodoni found intact pyramidal tract and retained motility in spite of the loss of the giant pyramidal cells. From all this, it is evident that an entirely satisfying explanation of the organization of the motor system is not yet forthcoming.

IV. *Congenital Disease of Cerebellum.*—In this article, Vogt and

Astwazaturow review the literature of congenital cerebellar disease, and carrying the research further reach conclusions of so great a degree of complexity, that in justice to the article an account of their results is not possible in the space at our disposal. Readers must be referred to the original article, which is profusely illustrated.

V. *Pellagra.*—The subject of pellagra receives at the hands of Kozowsky a careful investigation, particularly on the pathologic-anatomic side. Following a critical literary review of the disease and a knowledge gained through the researches of others, Kozowsky discusses methods of investigation. He objects on the whole to the use of the material as it has generally been employed. Although he realizes that in order to determine changes common to all cases of pellagra, it is essential to have recourse to a large material, nevertheless he feels that for the sake of exactness, the cases should be chosen much more carefully than has hitherto been done. The conclusion is reached that more definite results would result from an analysis of relatively few cases which from the diagnostic standpoint might be regarded as true pellagra. To this end, the following conditions are demanded: First, the presence of the definite clinical symptoms, diarrhea, skin alterations, nervous symptoms, and finally mental disturbance; second, lack of alcoholism, bad hygienic conditions, and syphilis in the history of the individual case; third, the patients must not be older than forty-five years. The difficulty of securing material of this type is recognized. (The paper will be concluded in a later number.)

VI. *Brain Weight.*—Scharpff offers some interesting statistics regarding the weight of the brain in relation to mental disturbance. Such a research is of the more value since recent study of the subject has established a somewhat definite average in the weight of supposedly normal brains. The attempt is made to determine what the general relations are, especially between dementia paralytica, senile dementia, functional psychoses in general, together with certain organic psychoses, and normal brains. The brains in all cases were weighed at once on their removal, with the pia intact. One hundred brains of male paralytics were weighed, with the general result that the diseased brains were distinctly less in weight than the controls. Twenty-five brains of men dying of senile dementia showed a somewhat similar condition. In the functional psychoses, lower brain weights were more frequent than the higher. In men, on a basis of fifty-three cases, the average weight was 1,357 grams The average weight of women's brains dying during a functional psychosis was 1,250 grams. From these figures, it appears that persons with functional psychoses have slightly lighter brains than normal. Other details are added which may be taken for what they are worth. In general, it is manifestly desirable in such a study to bring together a great number of observations. This article is a good beginning in that direction.

VII. *Sense Falsification.*—Fauser offers a technical and somewhat theoretical discussion on the psychology of sense falsification. He feels strongly that an anatomic-physiologic method of procedure must be insisted upon if progress is to be made in the elucidation and particularly in the localization of certain psychological events. In this study, he desires to keep separate from one another an anatomical-physiological factor and an associative psychic factor. By this means, he believes that certain information may be gained relative to the question of localization. He is of the opinion that an analytic psychiatry may well widen our

pathologic-anatomic knowledge and serve to deepen our psychological knowledge of the psychoses, thereby proving an aid to clinical psychiatry.

VIII. *Mental Disturbances in Navy.*—This article serves to illustrate what is being done in special psychiatrical work in the German navy. Various case are quoted, expert opinions given, and conclusions drawn. The paper is of local rather than general interest; but as an example of painstaking psychiatric work among a special class, it is of distinct general value.

E. W. Taylor.

MISCELLANY

Two Cases of Sexual Precosity. H. T. Machell. (Canada Lancet, Nov., 1911.)

The chief interest attaches to case 2 (boy) in connection with the pineal. *Case 1.* Girl: onset of menstruation æt. $6\frac{5}{12}$ years: much pubic hair; breasts resemble those of girl of 12 or 14. Other particulars given, and reference to Montanaire's case. *Case 2.* Boy: pubic hair æt. 5 months; erections one year later; emissions æt. $2\frac{1}{2}$ yrs. Father, æt. 33, weighed 12 lbs. at birth; developed early; height 5 feet; weight in clothes, 103 lbs.; is the small one of family; has 3 brothers normal size, the youngest developed early; two sisters, menstruated usual age, and are average height and weight. Patient whose photo shows pubic hair and great penite size, weighed 20 lbs. æt. 4 mos. (average = $12\frac{1}{2}$ lbs.); at 8 mos., 28 lbs. (av. 16); at 12 mos., 34 lbs. (av. 21); at 36 mos., 50 lbs. (av. 30). Height at 44 mos., 3 ft. $9\frac{1}{2}$ in. (av. 3 ft. 1 in.). Head, æt. 4 yrs., 22 in. round (av. 19.7); chest, æt. 4 yrs., 25.5 in. (av. 20.7). Dorsal surface of penis, measured from abdominal wall, $2\frac{5}{8}$ in., æt. $3\frac{4}{12}$ yrs.; very large when lax, enormous when erect. Emissions both "when playing with himself" and at other times. Habits those of much older boys; disdains toys of tiny tots. Manner independent; perfectly self-possessed with strangers, answering questions in a loud, bass, stentorian voice. Machell offers no suggestion recausation. The reviewer thinks a lesion of the pineal body is to be suspected, in the light of the work of Marburg, v. Frankl-Hochwart, and others. No mention of general health, but presumably good at present. The physical overgrowth, precocity in sexual, mental, and vocal development, all suggest hypo-pinealismus. The reviewer draws special attention to the heavy weight of P.'s father at birth, his early development and ultimate small size when grown up. He thinks this may mean that P.'s father showed a condition of non-fatal hypo-pinealismus in early life, to which was added during adolescence a condition of hypo-pituitarismus. The reviewer has previously suggested—as Marburg did—a relationship between the pineal and the pituitary in a letter on "Pineal Experimentation," in *Brit. Med. Journ.*, Vol. 2, 1910, p. 2002, but the subject is still obscure.

Leonard J. Kidd (London, England).

Book Reviews

FREUDS NEUROSENLEHRE; NACH IHREM GEGENWÄRTIGEN STANDE ZUSAMMENFASSEND DARGESTELLT. E. HITSCHMANN. Vienna, Deuticke, 1911, pp. 156.

Psychoanalysis has been subjected to a great deal of hasty criticism on the part of those who found it inconvenient to keep up with the literature of this new psychology. It is a common illusion for one who grasps a few of the leading principles of some new theory, and these but imperfectly, to imagine that he understands the whole. With the appearance of Hitschmann's work there should be little occasion for such reproach against future critics of psychoanalysis as this work gives a fairly accurate summary of the present status of psychoanalytical thought. Moreover, the work has been received favorably by the leaders of the new movement, so that it may be assumed that it speaks with authority for the so-called analytical school of psychology. The author does not deal only with Freud's theory of the neuroses. With this as a starting point, he reviews the most pertinent Freudian notions, always giving precedence to the practical over the purely theoretical aspects of the psychological problems which they touch. Thus, in a certain sense, the content of the work is broader than the title would imply. Each of the leading principles of psychoanalytic thought is considered in turn and the whole is woven together into a systematic and coherent presentation. This work should prove of special value to beginners, as the treatment of the subject is rather elementary.

It would be hardly possible to give even the most summary account of the psychogenesis of the neuroses without some preliminary understanding of Freud's notions of the subconscious, the rôle he ascribes to infantile sexuality and his interpretation of dreams. Accordingly, a chapter is devoted to each of these subjects. Hysteria, in the study of which the writings of the Freud-Breuer school have proven particularly fruitful, is also considered in a special chapter; this is followed by one devoted to the compulsion neuroses. Highly suggestive to the general practitioner, for whom the work is evidently intended, is the succinctly written chapter on the psychoanalytical method of diagnosis and treatment. This is true, perhaps even in a greater measure, of the excellent practical applications suggested in the chapter on "General Prophylaxis of the Neuroses" and in the one entitled, "Other Applications of Psychoanalysis." No medical man reading these chapters could fail to become impressed with the alluring promise which psychoanalysis holds out as a prophylactic measure in conditions with which medical men have had but little concern heretofore; the suggestions point to psychoanalysis also as a possible moulder of new and more adequate educational ideals. A chronological list of Freud's writings, for the convenience of those who wish to pursue the study of this subject further, concludes the work.

Bearing in mind that the book is intended primarily for the novice in psychoanalytical matters, it is to be highly regretted that the author has allowed his extreme enthusiasm to creep in and tinge the manner of ex-

position if not the content of the work. While one's enthusiasm for or extreme advocacy of a startling, novel theory, promising as much as psychoanalysis claims for itself, may be easily explained and just as readily overlooked in works of propaganda, it seems out of place in a volume designed to serve the purposes of an introductory text-book. In connection with a work like the present, intending chiefly to familiarize the novice with the guiding principles of psychoanalysis, judicious candor and cool objectivism are preferable. Unfortunately these qualities are not exhibited as fully as might be desired; they are obscured by a manifest spirit of partisanship. The result is that the beginner who treads upon ground altogether unfamiliar is likely to be surprised unawares into a less intelligent partisanship, which in the long end may only rebound in harm, while not a few among those whose critical acumen is sufficient to carry them over the ground safely may be repelled, perhaps to their own detriment, by the very reckless manner in which Hitschmann abandons himself to the views of his master, Freud. Such expressions as "Freuds Aufdeckung" or "volkommen neue Aufdeckung" in connection with commonplace observations and facts which have been known all along among competent psychologists throw the whole work into a lower scale than it otherwise deserves and is likely to lessen its serviceability.

The statement, on page 59, to give a concrete example, "die psychologische Untersuchungen haben, bestätigt vom Associationsexperiment, mit aller Sicherheit erwiesen, dass es in den psychischen Äusserungen, nichts kleines, nichts unwillkürliches, nichts zufälliges giebt," is erroneous in a double sense when taken in conjunction with the theme and purpose of the work. In the first place, the proposition that every psychic manifestation (no matter how trivial, seemingly accidental, it may appear) has its meaning, its place in a well-ordered system and is organically correlated to the subject's psychic activity as a whole, is neither a novel theory nor peculiarly Freudian. This notion might be traced back to Greek and even earlier speculation. The merit of psychoanalysis does not rest in having discovered this fact as is often intimated by some of Freud's pupils. Far from being a fact, in the nature of the case, such a generalization can only be and remain a hypothesis. It happens to be one upon which psychoanalysis is willing to build a part of its superstructure. It does this, by taking the hypothesis for granted. The merit of psychoanalysis in the eyes of the more careful pupils of Freud consists in the ingenious explanation which it offers for this workable hypothesis or assumption, so useful in the organization of its basal principles, but it would be a serious blunder in logic to appeal to the plausibility of the assumption as proof of the validity of the Freudian theories based upon it, or to take the latter, as yet *sub judice*, as proof of the former.

In the second place, it is rather imprudent for the author to quote with unequivocal approval, as proof of the validity of the much debated and but little understood Freudian principles, the results of an experimental method like the association tests, about the practical value of which there exists, a considerable difference of opinion among those competent to judge. The testimony of a witness whose statements are the subject of suspicious scrutiny and considerable diversity of opinion as to the meaning thereof is of doubtful value. At times, such a witness can only harm an otherwise strong cause and becloud its issues. Surely Hitschmann must be aware that psychologists are by no means agreed as to the validity or even the meaning of the data obtained through the *Tatbestandsdiagnostik*. Its

early promises, as is the case with many a wonderful discovery or technique of which much is made at first, have nowhere been fulfilled. Those who have had the greatest experience with the method are unable to point to a single practical discovery attributable to the association tests alone. As a method of research it is undoubtedly worth all the attention that is given to it in laboratories and psychopathic institutions,—at least until its practical worth shall have been appraised more thoroughly; the intimate relations of the *Tatbestandsdiagnostik* with the beginnings of psychoanalysis may be properly brought out even in the most elementary text-book for beginners, but why place upon it such an uncritical emphasis?

The impression one gains upon reading these pages is that the author has attempted to do more for his reader than the latter should expect of any author. It would have been preferable if the author had limited his task to outlining the Freudian theories fairly, leaving the reader to judge for himself whether the explanations really explain.

Here is another example or two, taken at random to illustrate further Hitschmann's disregard for the true proportion of things. "He has solved the age-old riddle of dreams." This is undoubtedly a reckless way of stating to beginners the plain fact that Freud has proposed a very ingenious theory of dreams which is now on trial: a theory which seems highly satisfactory in the experience of a number of investigators and less so in that of others, equally earnest. The extremely positive terms in which the author speaks of the erotogenic theory of dementia præcox (page 100) is rather provoking to all who appreciate the complexity of this problem and have not yet succumbed unreservedly to the unquestionable ingenuity of Freud's conception. Freud's theory is extremely suggestive indeed, and may even prove more fruitful in results than any other hypothesis that has been proposed thus far upon which to base a rational prophylactic and curative plan of treatment, but no known facts thus far, not even the observations of the most experienced Fachmänner as recorded in our literature, justify the abandonment of caution in such matters.

Indeed it is the author's most glaring fault that he should have been carried away so completely by his enthusiasm for Freud as to have thrown all caution to the wind. A man who would chronicle the status of any scientific subject at a given time must be prepared to approach his material with an impartial hand and judicious eye. Neither the "laudator acti" nor the sophisticated sceptic can accomplish properly such a task. Psychoanalysis, in particular, needs the services of one who would step in the breach between the two fighting camps and inform the "onlooker" of the facts in the matter. Hitschmann's work has not made this need less urgent. He goes so far as to proclaim Freud the "discoverer of the subconscious," "gegenber der herrschenden Bewusstseinpsychologie." Strange that this statement should come from the homeland of Gustav Feodor Fechner and the great philosopher and psychologist of the subconscious, E. v. Hartmann, particularly at a time when there is such a strong revival of interest not only in Germany but throughout Europe in the works of v. Hartmann and Schopenhauer the great philosopher of the subconscious will. As to Fechner's works (leaving aside of course his Psychophysics) they abound in hypothetical structures and ingenious suggestions along many of the lines with which Freud is concerned in his speculations. No theory of Freud's is more fanciful than some of Fechner's notions and the two are equally unsusceptible of the kind of proof which it has become the custom of psychologists to require (whether rightly or not, is another matter). In

view of the revival of interest in E. v. Hartmann's works Hitschmann's "versehen" is not without its significance.

The chapter on "Prophylaxis of the Neuroses" is disappointingly small. Six pages is hardly sufficient space in which to record all the practical suggestions which flow from a proper appreciation of the psychoanalytical viewpoint in addition to the usual warnings, such as against showing too great tenderness towards children, fondling them, taking them into bed with adults on any pretext, etc. One permeated with the psychoanalytical point of view need only allow his mind to dwell on the subject to find numerous practical suggestions which have not been brought to light with sufficient emphasis thus far. The prophylactic field is rich with valuable grains of suggestion and the gatherers have not been numerous, so that it would be logical to expect that when a writer does strike upon it he would make the most of his opportunity. Hitschmann's failure to do so would not be a serious criticism if it were not for the fact that in this particular instance it betrays an attitude, which is far from commendable in a scientific treatise. The rule, properly enough, is that we should be thankful for what we get, rather than protest that we did not get more. But when the meagerness of information is symptomatic of the author's cringing subservience to his master, the fact deserves to be pointed out at least as a warning to others. The reason why Hitschmann discusses so briefly how education should deal with the practical problems of childhood crops out in an incidental remark that "darüber hat sich Freud nicht ausführlich geäussert."

It is the exhibition of just such humble dependence upon, such meekness towards Freud, such avowal that the master has not yet spoken and the implication thereof that the pupil has not learned to reason for himself, or to make use of his own natural gifts that apparently justify the severe accusations, by the editor of the *Zeitschrift f. Straffrechtswissenschaft* and many others, against the followers of Freud that they are actuated by a blind enthusiasm and are being led, in the very worst sense of the term. The reviewer inclines to think these criticisms greatly exaggerated and for the most part unjustified. This is exactly the reason why he points out with regret a glaring instance which seems to lend a strong color of truth to such a view.

We understand that an English translation of this work is being contemplated. Some popular introduction to the theories of psychoanalysis for the English-speaking portion of the medical profession would certainly be highly welcome. The time is eminently ripe for such a work; but in view of the spirit in which "Die Neurosenlehre Freuds" has been conceived it can hardly be said that it would fill the want which the growing interest in psychoanalysis has created. A specially prepared account which would avoid the false perspective of blind partisanship should prove of greater value both to the new movement and to the readers of the work.

At any rate should it be published in translation, it is to be hoped that the translator will carefully prune away the erroneous expressions and the misstatements, only a few of which have been mentioned here by way of illustration. After all, it is not without its decided merits, as has been stated in the beginning. The most glaring shortcomings are matters of detail and perspective. Properly annotated the book should prove useful.

J. S. Van Teslaar.

Worcester, Mass.

DIE EPIDEMISCHE KINDERLÄHMUNG. (Heine-Medinsche Krankheit.) Von Prof. Dr. Paul H. Römer, Abteilungsvorsteher am Institut für Hygiene und experimentelle Therapie in Marburg. Julius Springer, Berlin.

The recent epidemic of poliomyelitis in Northern Germany (Hesse-Nassau) has given rise to two excellent monographs upon this disease. That of Müller we have had occasion to review, and it is fortunate that the present author, who followed the epidemic with Müller, should have given his epidemiological and experimental data, which the former monograph presented in condensed form. These two monographs, therefore, supplement each other, the former laying more stress upon the human, clinical features, and the latter upon the bacteriological, serological, and animal experimentation findings.

The historical and clinical résumés are short, the author himself suggesting that the studies of Wickmann and Müller should be consulted if completeness is desired, but when the etiological, pathological and epidemiological factors are entered upon the present work is the fullest and most intense of all our recent studies in this field.

After sketching the "dentition etiology" era of the older English authors, Heine's acceptance of it, and extension to the gastro-intestinal tract, Römer starts the modern etiological era with the work of Strümpell, who clearly grasped that the disorder was an infection. Then follow the "coccus" era and the general bacteriological search, which the author sums up as negative, although certain bodies were found by ultramicroscopical methods, by him as well as by Flexner, the nature of which is still uncertain. Specific cellular inclusions are described which have received special attention from Hough and La Fora in this country. Culture experiments with the virus were negative. The results of animal experimentation are given in great detail, and some excellent illustrations given of the clinical features observed in these animals. These show the typical prodromes—palsies, spinal, bulbar and cerebral; the gastro-intestinal symptoms, and typical abortive forms of Wickmann. A special marantic form postulated by Leiner and Weisner is also recorded. The healing phases follow closely the trends observed in man.

With reference to the nature of the virus, it is established that it can pass the usual bacterial filters; that it retains its activity unaltered in dilute glycerine, for at least 142 days; that it is not altered by low temperatures, nor by drying, in which respect it varies considerably from the virus of rabies; that permanganate, and hydrogen peroxid affect it rapidly; that it retains its virulence sometime in the animal body, and that it is probably modified in passing through other animals, but to what extent has not been determined.

Rabbits are useless as experimental animals, notwithstanding the claims of Krause and Meinicke. Pathologically Römer adds little to the researches of Harbitz and Scheel, Wickmann, Strauss and others.

Commenting on the path of infection, Römer emphasizes the central nervous system, and the lymphatics, as the chief tissues involved. He says that it remains to be proved that the nasal mucous membrane is a port of entry, the respiratory tract is a possibility, the gastro-intestinal tract a probable port.

The author then discusses the epidemic extensions, and in the final chapters takes up the question of prophylaxis and therapy. Immunity for an unknown period is the rule. This is true for monkeys and man. Immunizing experiments on monkeys do not, as yet, give uniform results, but specific antibodies have been found, and the possibility of a specific serum is maintained. Römer described specific serum reactions, which are of diagnostic importance. In one experiment the virus was derived from Austrian sources, the antibodies from French cases, and the reactions demonstrated not only the identity of the inciting agent for both epidemics but also the identity of the sporadic and epidemic forms.

A short chapter on therapy closes this excellent monograph.

JELLIFFE.

THE INDIVIDUAL DEVELOPMENT OF MAN. A Discussion of the Influence of Labor on the Evolution of the Individual. By Harriet R. Beary. New York, The Hartman Publishing House. 1909. Pp. 155.

This work emphasizes the fact which is continually being brought to our attention that there are people in the world who think in such different symbols from ourselves that the output of their minds becomes practically incomprehensible, in much the same way as to an American or a European the structure of the Chinese language, without letters, without parts of speech, without conjugations or inflections, is a medium incomprehensible to us by which to express our thoughts.

The preface of this book reads as if it were a testimonial to some special form of medical treatment; in fact the writer goes through several pages of explanation of the nervous dilapidation to which she had gotten herself by overwork, the unsuccessful operations that had been performed upon her, and then tells how she finally consulted a physician who brought her out of all this trouble, diagnosing her case as depression of the sympathetic nerve ganglion.

As an example of some of the incomprehensible things in the work: In the preface the author says that she has found "that a continuous nerve current can be produced by the natural method of singing" and leaves this statement without any further explanation. One other quotation will serve to show what one may expect if they undertake to read the book: "The term positive force, as used by scientific men, seems to be determinable only by psychology. To differentiate positive from negative force in the organism is to permeate layer after layer with that power called life, until at last we reach the extreme inner and outer surfaces where there is no longer a mystery. An organism may not be in a state of decay, yet it may be comparatively lifeless through inactivity due to one cause or many. This entanglement by inactivity, by adhesion, and by surplus of waste product incapacitates function, producing either undue relaxation, or tension, which is force in the negative."

WHITE.

A SYSTEM OF MEDICINE BY MANY WRITERS. Edited by Sir Clifford Allbutt, K.C.B., and Humphrey Davy Rolleston. Vols. VII and VIII. Macmillan & Co., London and New York.

With Volume IX, on Diseases of the Skin, this masterly System comes to a close, in its new revised and mainly rewritten second edition.

It is not our purpose to review the entire series, worthy as they are of the neurologist's attention, but we shall confine our comments to the volumes dealing with nervous and mental disease. These are two in number, Vols. seven and eight. The former volume also deals with the subject of Diseases of the Muscles. The chapters are written by well-known neurologists. Thus Dr. F. E. Batten takes up myositis, and revises Beevor's chapter on Myopathies of the first edition; Collier gives us an up to date discussion on Amyotonia Congenita; Buzzard discusses Myasthenia Gravis, and Michell Clarke Family Periodic Paralysis. In this latter chapter we have no indication of the suggestions, which have come through many studies, of the relationship of this disorder to perverted mineral metabolism.

The section on Trophoneuroses is practically identical with the previous edition. The sections are clinically rich and illuminating. Inasmuch as the advance of our knowledge of these disorders has been very gradual, if not in certain respects restricted, this older chapter fairly well represents a conservative estimate of the present-day standpoints.

Dr. Mott then contributes an excellent discussion of neuropathology. It is a masterly chapter in its pathological, physiological, and clinical sides. The cerebrospinal fluid with its modifications in disease is here described with fulness. Mott believes in the superiority of the original Wassermann methods for the study of the fluid.

Sherrington has an attractive chapter on Tremor, Tendon Phenomenon, and Spasm, and Gowers a strong clinical section on Medical Ophthalmology.

Then follow the Nervous Disorders proper. Gibson and Fleming discuss the Diseases of the Spinal Nerves. Fleming the Cauda. Bury has a chapter on Multiple Symmetrical Peripheral Neuritis, which has the advantage of completeness, clearness and modernity.

Head has a chapter on Zoster, and Trigeminal Neuralgia, Holmes a new chapter on Diseases of the Sympathetic, which though short is valuable. Turner has a full chapter on the Cranial Nerves, Horsley on Diseases of the Vertebral Column and Compression Paraplegia, and Russell on The Spinal Meninges.

In the final section are chapters by Starr on Poliomyelitis, by Buzzard on Myelitis, Landry's Paralysis, by Batten on Hematomyelia and Bulbar Palsy, and further chapters by Holmes, Collier, Hill, Harris, Ormerod, Stewart and Edwin Bramwell. Most of these chapters have been carefully revised and rewritten, and they reflect present-day neurology, particularly in its clinical aspects.

This new edition of Allbutt, so far as nervous disease is concerned, is in reality a new edition. Most of the material has been adequately and satisfactorily presented, but this is far from being the case with the volume on Mental Diseases, which is deplorably behind the times, and insular in the extreme. The present-day attitude, here reflected, to the German school, particularly to Kraepelin's work, is precisely that spoken of by Tuke, when he ironically gibed at English psychiatrists, of a century ago, who looked upon Pinel as a silly old woman.

As we wish to review this volume on psychiatry more in detail, we purpose leaving it at this time.

JELLIFFE.

Über Ruheübungen und Ruheübungs-apparate. Zur Psychologie und Hygiene des Denkens. Zwei Vorträge, gehalten von Dr. med. et phil. Leo Hirschlaff, Berlin, Verlag von Julius Springer, 1911.

The first paper deals with the question of rest. It describes a number of pieces of apparatus and a number of experiments. The article is too much detailed to permit of abstraction. The author, however, thinks that education in resting and concentration is one of the most important factors in nerve hygiene and psychotherapy, and thinks that it might be applied to many muscular disturbances such as the tics, the muscle unrest of the neurasthenics and hysterics, chorea, tremors, the hypertonia of paralysis agitans, occupation neuroses such as writers' cramp, and a number of other conditions.

The second paper, on the psychology and hygiene of thinking, is somewhat more philosophical in its trend but emphasizes over again the desirability of practice in resting. The author thinks it is possible to outline a scientific, systematic direct hygiene of the mental life grounded in psychology, and which can be followed practically.

White.

L'Étude Expérimentale de L'Association des Idées, dans les Maladies Mentales. Par les Docteurs Aug. Ley and Paul Menzerath. Gand, Imprimerie A. Vander Haeghen, Rue Des Champs, 60, 1911.

After a historical review and a description of technique, the authors plunge in medias res, and take up an experimental study of the different psychoses from the point of view of word association. The book, as a whole, consists very largely of very long tables of association reactions. The authors conclude, among other things, that the association reactions of the normal are different from those of psychopaths, and that the differences in association reactions among different patients are of extreme diagnostic importance; for example, the method is of great importance in the differential diagnosis between mixed states of manic-depressive psychosis and neurasthenic states which mark the beginning of dementia præcox. The method is an extremely important one for exploring the affectivity. It is a valuable clinical method which may be applied as a routine procedure by using a list of a hundred words, and the authors recommend that clinicians agree upon such a list in order that their lists may be comparable. They think, too, that if these words are given to patients in series of twenty at each seance that the method may be employed with as much facility and as rapidly as any other method.

White.

Notes and News

EXTENSION COURSE IN NERVOUS AND MENTAL DISEASES.

The Medical Faculty of Fordham University has resolved to institute a series of Annual Extension Courses in order to increase the scope of post-graduate instruction in this country. Only one course will be given each year. Only one branch will be dealt with in each course. The first course will be devoted exclusively to Nervous and Mental Diseases. This course will last three weeks; will begin September 9, 1912, and will be conducted daily from 9 A.M. to 7 P.M.

For this course the faculty will have the assistance of the following celebrated foreign and American physicians and scientists:

DR. NICOLAS ACHUCARRO, of Madrid, Coadjutor of Ramon y Cajal of Madrid, formerly Histopathologist, Government Hospital for the Insane, Washington, D. C.

CARL L. ALSBERG, M.D., Ph.D., Washington. Biological Chemist to United States Government.

H. H. GODDARD, Ph.D., Psychologist of the New Jersey School for Feeble-Minded Children.

HENRY HEAD, M.A., M.D., F.R.C.P., F.R.S. of the London Hospital. England. Croonian Lecturer, Royal College of Physicians of London, 1911.

GORDON HOLMES, B.A., M.D., M.R.C.P., Lecturer on Physiology of the Nervous System, London University; late Director of Laboratories, National Hospital, Queen Square, London; Physician to Out-patients at National Hospital, Queen Square, London.

C. J. JUNG, M.D., Zürich, Associate in Psychiatry in the University of Zürich, Switzerland.

DR. ALWYN KNAUER, Psychiatrische Klinik Munich, Assistant to Professor Emil Kraepelin.

J. V. MAY, M.D., President of the Commission of Lunacy, New York State. Late Superintendent of Matteawan State Hospital.

COLIN K. RUSSELL, M.D., of McGill University, and of Victoria Hospital, Montreal.

WILLIAM A. WHITE, Superintendent, Government Hospital for the Insane, Washington, D. C.

A commencement will be made with the normal and pathological anatomy, histology, physiology, biological chemistry and bacteriology of nervous and mental diseases. Simultaneous with these fundamental subjects, methods of clinical examination will be taught. The subjects will follow one another in logical sequence. All cognate sciences and laboratory practice will be made subservient to clinical purposes. No purely didactic lectures will be given. The teaching will be profusely illustrated by patients, specimens, cinematograph, and lantern slides. Correlated practical courses in histology, normal and morbid; in bacteriology; in operative surgery; and in psycho-analysis will be provided. For those especially interested in any particular subject, such as histology, bac-

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PITTSBURGH NEUROLOGICAL ASSOCIATION

A number of physicians of Pittsburgh interested in the study of nervous diseases, who have been meeting from time to time for the past two years informally as a neurologic club, have formally organized a society for the study of nervous and mental diseases known as the Pittsburgh Neurologic Society which contemplates holding five meetings each year. Dr. Samuel Ayres has been elected president and Dr. E. E. Mayer made secretary. The original members of the society are Drs. Samuel Ayres, Theodore Diller, C. H. Henninger, D. B. McIntire, T. M. T. McKennan, E. E. Mayer, W. K. Walker, C. C. Wholey, and George J. Wright.

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PSEUDO-BULBAR PALSY, CLINICALLY AND PATHOLOGICALLY CONSIDERED, WITH THE CLINICAL REPORT OF FIVE CASES

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Pseudo-bulbar palsy is an organic disease of the central nervous system, characterized by bulbar symptoms. It is caused by lesions, not in the bulb, but in the higher parts of the cerebrum. Clinically it differs from true bulbar palsy in its sudden or apoplectiform onset, in its irregular, non-progressive course, in its association with spastic hemiplegia, diplegia or paraplegia, in its tendency toward repeated attacks followed by marked improvement, in its retention of the cranial nerve reflexes and absence of amyotrophia (including fibrillary tremors, muscle wasting and reaction of degeneration), and in its long duration and characteristic disturbance of the patient's emotional tone. It is a disease of the upper neurone type, especially involving some of the cranial nerves. The nerves most frequently affected are the hypo-

glossal, facial, glossopharyngeal and vagus; less frequently, the trigeminus, abducens and oculomotor. Histologically, the nuclei of these nerves are normal; the arcs of their immediate reflexes are unbroken. The delinquencies in the cranial innervation are due, not to changes in the nuclei of the cranial nerves themselves but to partial or complete interruptions of the tracts connecting these nuclei with the cerebral hemispheres, the cerebellum, and perhaps, the tectum of the mesencephalon.

In a typical case the patient is stricken with an apoplectiform seizure, losing consciousness during the attack. The resulting paralysis is generally a hemiplegia, involving the face, tongue and extremities of the same side. In the course of the next few weeks these symptoms become less marked; the patient's condition steadily improves; in a few months the paralysis of the limbs, tongue and face has disappeared; customary occupations are resumed and, to all appearances, a normal state of health is restored. About two years later a second attack occurs. This time the paralysis has a different distribution; for if the right side of the body was affected at the first seizure, it is now the left side that becomes paralysed. Evidence of the bulbar disturbance is more pronounced, dysarthria, dysphagia, and bilateral prosopoplegia being prominent symptoms. Immediately following this attack the most conspicuous clinical manifestation appears. The patient's emotional tone becomes greatly changed; fits of uncontrollable, prolonged, spasmodic laughter occur frequently and without provocation. The disease for this reason has often been referred to as the "laughing sickness." Violent spells of weeping may replace or alternate with the laughter. There is no tremor or atrophy in the muscles supplied by the cranial nerves, or in any other part of the body. All of the symptoms improve slowly in the months that follow, but at the end of another year a third attack occurs and, with this, the disease usually terminates fatally.

As a term, pseudo-bulbar palsy has not proved altogether satisfactory. It does not indicate the location of the lesions causing the symptoms; it does not denote the character of the malady and may easily convey an incorrect impression of the real nature of the disease. To overcome these defects, the synonym, supranuclear bulbar paralysis has been suggested. This term has the merit of indicating the general position of the lesion; at the same

time, it makes a clear distinction between the nuclear and supra-nuclear forms of bulbar palsy. Notwithstanding this, however, pseudo-bulbar palsy, although a purely conventional term, has gained a fixed place in the literature.

Several writers have questioned the possibility of making a diagnosis of pseudo-bulbar palsy without the aid of autopsy. Their chief objection arises from the fact that the lesions are usually multiple and subject to much variation in location. In addition to this a number of cases are of mixed type; their symptoms are in part those of the supra-nuclear and in part those of the nuclear variety. The contention is that the pure bulbar form cannot be clinically differentiated from the mixed bulbar form and consequently the diagnosis must depend upon post-mortem examination. It would seem, from a study of a large number of cases reported in the literature, both with and without autopsy, that this attitude is unnecessarily conservative. There can be little question that the syndrome itself presents a well-marked clinical picture of its own.

The following analysis is based on 173 recorded cases.[1] To this number are added five other cases, four of which the writers have had under observation for several years in the neurological wards of the Kings County Hospital; the fifth case was seen in private practice. An analysis of the clinical features of the disease will first be discussed and subsequently the pathological anatomy. In the percentages given fractions of less than one half are discarded; one half or over is computed as the next higher figure.

Character of the Onset.—In a large majority of cases the onset of the disease is sudden. In some instances, it is ushered in by a typical apoplectic seizure; in others, the attack is sudden but not apoplectic. A relatively small number of cases develop gradually; an equal number are congenital and a very few begin with epileptiform convulsions. The following analysis gives the above details in percentages.

In 88 per cent. of cases the onset is sudden; in 67 per cent. consciousness is lost during the onset.

The type of the initial paralysis varies considerably in different cases. It may be hemiplegic, diplegic, paraplegic, mono-

[1] Seventy-five of these cases were compiled by the writers from the original articles. For the remainder, we are indebted to Urstein's excellent dissertation on pseudo-bulbar palsy, published in Warsaw in 1900.

	Per Cent.
Sudden with apoplectic seizure	67
Sudden without apoplectic seizure	20
Sudden with epileptiform seizure	1
Gradual	7
Congenital	5

plegic or bulbar. Not infrequently the first paralysis is bulbar in combination with palsy in one or more of the extremities. The distribution of the initial paralysis is given below:

	Per Cent.
Hemiplegic and bulbar	55
Bulbar alone	21
Hemiplegic alone	7
Diplegic	6
Monoplegic	5
Paraplegic and bulbar	4
Paraplegic alone	2

The cranial innervations are involved as one of the initial symptoms in 80 per cent. of cases. Hemiplegia occurs, among the first disturbances, in 62 per cent.

Of the cases which develop gradually, the largest number have a bulbar palsy as the initial paralysis; diplegia, paraplegia and monoplegia, in the order mentioned, are next in frequency. Two cases, in their inception, were symptomatically classed as multiple sclerosis. Subsequently they assumed indubitable features of pseudo-bulbar palsy.

In the congenital cases, bulbar palsy is the most conspicuous symptom. Hemiplegia, diplegia and paraplegia are also represented. One congenital case was complicated by epilepsy; another was familial and hereditary.

A defect in speech is the most common of the initial bulbar symptoms. This occurs in 68 per cent. of cases. Articulation becomes faulty due to a paralysis of the tongue, lips, soft palate, pharynx, larynx or muscles of the jaws. These parts may be affected separately or in several different combinations. The degree of the speech disturbance varies from a complete anarthria to a slight dysarthria. Occasionally paralysis of the facial muscles, especially those of the lips, appears as the first bulbar symptom. Less often, the pharynx alone is first involved. The rate of frequency of these several varieties of bulbar paralysis is shown below:

Twenty-four per cent. of cases presents no bulbar involvement among the first symptoms.

	Per Cent.
Tongue alone involved	38
Tongue and pharynx	15
Tongue and face	5
Tongue, face and pharynx	9
Face alone	6
Pharynx alone	3

The disorder is more common in men than in women, the ratio being one and a half to one. Although the disease may develop at any period of life, it has a decided tendency to make its first appearance in the decade between the fortieth and fiftieth years. A glance at the figures tabulated below will show that the age curve ascends gradually from the first decade, reaches its summit in the fifth, and recedes, as gradually as it has arisen, to the eighth decade.

	Per Cent.
Decade between 1st and 10th years	1
Decade between 10th and 20th years	7
Decade between 20th and 30th years	10
Decade between 30th and 40th years	17
Decade between 40th and 50th years	30
Decade between 50th and 60th years	18
Decade between 60th and 70th years	10
Decade between 70th and 80th years	1

These figures, of course, do not include the congenital cases.

Course and Duration.—The patients who are stricken suddenly usually have subsequent attacks of a similar character. In some cases the unmistakable features of the syndrome do not appear until the second or third seizure. The number of attacks seldom exceeds four. A case reported by Rose had ten attacks in the course of twelve years; eight of these were sudden without loss of consciousness; two were typically apoplectiform. Perrara reports a case with six sudden attacks and Lloyd one with five. Two cases developed bulbar symptoms after epileptic convulsions; the epileptiform seizures in one of these cases occurred as a series of ten distinct attacks; after each attack the patient presented the typical picture of pseudo-bulbar palsy. The second case, that of a young girl suffering from habitus epilepticus, developed bulbar symptoms, with much less regularity, in the course of the disease. The following figures show the number and frequency of attacks.

	Per Cent.
Cases with one attack	15
Cases with two attacks	47
Cases with three attacks	21
Cases with four attacks	2
Cases with five or more attacks	3

Seventy-three per cent. of cases has more than one attack.

The length of the interval between attacks varies within wide limits from a few days to twelve years. The average length of interval between the first and second attacks is eighteen months; between the second and third attacks twelve months; between the third and fourth, thirteen months; between the fourth and fifth, six months. If this averaging of the intervals shows anything, it is a slight tendency for the time elapsing between successive attacks to become shorter. These averages, of course, only express the disposition of a majority of instances. They fail to show the variability and irregularity which characterize the intervals in individual cases. More important than the length of the interval, is the tendency for the patient to improve between attacks. The improvement after the first attack, as already stated, may amount to what appears to be a complete recovery; the patient resumes customary occupations and has no definite disturbance of function. On the other hand, this improvement may be very slight and gradual. The tendency toward improvement is not so marked after the third or subsequent attacks.

Another characteristic feature in the course of the disease is the tendency of the paralysis to change its distribution at each successive attack. A patient who at the first seizure, develops a right hemiplegia may, after the second, present a left hemiplegia and bulbar palsy. This shifting of the paralysis is well shown in a case with six recorded attacks. The paralysis following the first, fifth, and sixth attacks was bulbar; following the second it was a left hemplegia; following the third a right hemiplegia; and following the fourth a left hemiplegia. In another case with ten attacks the paralysis shifted as follows: first, second and fourth attacks, right hemiplegia; third attack, left hemiplegia; remaining six attacks, bulbar palsy.

Of the cases having two attacks the paralysis shifted

	Per Cent.
From right hemiplegia to left hemiplegia in	26
From left hemiplegia to right hemiplegia in	25
From bulbar paralysis to hemiplegia in	20
From hemiplegia to bulbar paralysis in	11
From bulbar paralysis to paraplegia in	7
From hemiplegia to paraplegia in	3

In eight per cent. of the cases the paralysis did not shift at all.

Of the cases having three attacks only nine per cent. showed

no shifting of the paralysis. In the remaining ninety-one per cent. the combinations were so varied as to make tabulation impracticable. The paralysis of the cases having but one attack is bulbar alone in 25 per cent.; bulbar and hemiplegic in 68 per cent.; bulbar and paraplegic in 7 per cent.

In estimating the duration of the disease it would be inaccurate to make the computation on the basis of all the recorded cases, since many of these are still under observation. To avoid this error, only the ninety-seven cases with post-mortem examinations are included in the calculation of the average length of time elapsing between the first attack and the death of the patient. In one case the disease lasted twenty-eight years, in another sixteen days. Within these widely separated limits there is much variation, but the average duration is four and one half years.

Bulbar Symptoms.—The most prominent of the bulbar symptoms is the speech defect. It occurs in every case. Many adjectives have been used to describe this disturbance. The speech has been called "nasal," "dull," "monotonous," "awkward," "stammering," "muddy," "pasty," "slow," "scanning" and "explosive." One writer states that his patient has "lost the song of the language." Often only those closely associated with the patients can understand them. The degree of speech-defect, in different cases and in different periods of each case, varies from a complete anarthria or aphonia to a slight dysarthria. It is in no sense an aphasia but takes its character from a derangement in the muscular mechanism necessary to the production of spoken language. The muscles of the tongue, of the lips, of the jaws, of the palate and pharynx, of the larynx and even the chief respiratory groups may be at fault. The tongue alone is frequently involved, but as a rule the trouble is due to a combined disturbance in several or all of these elements. If this derangement is to be called a paralysis it should be borne in mind that the loss of power in the muscles involved concerns only the production of voluntary acts. The simpler reflex movements are still intact. Some of the more highly organized and fundamental reflexes are also retained. Thus patients who are able to make very imperfect voluntary movements with the tongue and lips, can suck water through a tube in a perfectly natural manner. Like all of the other symptoms, the speech defect is most pronounced

immediately after the sudden onset. In the intervals between the attacks it tends to become less evident and may only be developed by special tests. In many cases improvement is slight and whatever amount of gain may be made is always lost at each successive attack. In the more extreme cases the patient is unable to make any voice sounds. If phonation is only partially impaired voice sounds may be produced with a considerable amount of distinctness except for a nasal quality. In these instances the pronunciation of the vowels is clear, but great difficulty is experienced with the consonants since these sounds require more complete movements for their production. When the patient is able to form words this process is carried on slowly; each syllable is dealt with separately so that the speech is actually syllabilized and sometimes seems to be of the scanning type. Often the speech is gasping because the patient suffers from a marked dyspnea. Even when these disturbances are only slight the defects of speech may be elicited by increasing the word production from a slow to a rapid rate. Spoken slowly the words are clear, but when uttered at the normal conversational rate, they become confused and are badly jumbled at any speed above this. In brief, the disturbance of speech may be characterized as a greater or less degree of disorganization of what has been called the synthetic series of skilled muscular acts concerned in spoken language.

The muscles of the tongue are paralyzed at some stage of the disease in ninety-seven per cent. of cases. As a rule, both intrinsic and extrinsic muscles are affected and the involvement is bilateral. The tongue either lies deeply in the mouth cavity or protrudes slightly over the teeth. In extreme cases and in all cases immediately after the acute attack, all voluntary movements are lost. Some degree of motion is regained during the intervals between seizures in a large proportion of cases. The paralysis seldom causes an abrogation of the simpler associative reflexes. The patient may be unable to move the tongue from side to side when directed to do so; he may not be able to protrude it, draw it back, depress it against the floor of the mouth, or elevate it against the palate in response to the will; yet all of these movements can be well executed in such acts as respiration, laughing or crying, sneezing or sucking, and in part, at least, during deglutition.

If tremors occur in the lingual muscles they are of the coarse variety and only in rare cases is there any evidence of muscle wasting.

Paralysis of the facial musculature is a conspicuous bulbar symptom. It is usually a bilateral prosopoplegia with one side slightly more involved than the other. It occurs in eighty-eight per cent. of cases. The facial palsy may be readily observed by the drooping of the angle of the mouth, and the drooling of saliva; but in spite of this, the emotive expression suffers surprisingly little. Voluntarily the patient may not be able to use the facial muscles to elevate the angles of the mouth, to purse the lips as in whistling, to wrinkle the forehead or make a grimace. On the other hand, these muscles functionate normally in laughing and crying; they retain their reflexes and suffer from no trophic changes. In three of the cases reported by the writers the patients were unable to purse their lips to whistle; in another case the patient, who had been able to play the clarionet for years, noticed, among his first troubles, an inability to control the movements of the lips. All four of these patients were able to suck water through a tube without the slightest difficulty.

The general characters of the facial paralysis are shown by the following figures:

	Per Cent.
Bilateral paralysis of lips alone (lower facial)	50
Bilateral paralysis of entire face	30
Unilateral paralysis of lips alone	3
Unilateral paralysis of entire face	4
Bilateral paralysis of lids and brow (upper facial)	1
Cases with no facial paralysis	3
Cases with no mention of facial paralysis	9

Paralysis of the palatine and pharyngeal muscles occurs in ninety-seven per cent. of cases. In two per cent. no statement was made in this particular and in one per cent. the muscles were not involved. As a rule, the anterior palatine arch is retained, the palatine and pharyngeal reflexes are active and there is no reaction of degeneration Occasionally palatoptosis occurs, the relaxation being more marked on one side than the other so that the uvula points away from the median line. In these cases the reflexes are feeble or absent. The impairment of the palate muscles is most evident in voluntary acts such as the first phase of deglutition and articulation. The deficiencies of the palatine muscles in spoken language have already been referred to; it is

these defects which give the speech its flat or nasal quality. Dysphagia is present in sixty-nine per cent. of cases. In some instances patients are able to swallow only semi-solid foods. Deglutition is always slow and often interrupted by attacks of coughing or regurgitation of fluid through the nose. This disturbance is more marked in the severer cases and in all cases immediately after the acute attack. The patients then are able to take only fluid nourishment. Feeding by stomach tube is occasionally necessary. When the dysphagia is so marked the difficulty is sometimes met by employing a long-billed feeding cup and literally pouring the fluid into the pharynx.

The laryngeal muscles are less frequently involved. Paralysis in this group occurs in sixteen per cent. of cases. As is true of all the other muscle groups, the loss of power applies only to voluntary acts. The simple or associated reflexes are retained; the position of the vocal cords is normal. In a number of cases the voluntary paralysis is confined to the muscles of one side. The voice disturbance may be a complete aphonia or only a mild degree of dysphonia. Several writers are of the opinion that the explosive voice, occasionally observed, is due to a spasm of the laryngeal muscles.

The muscles of mastication are affected in seventeen per cent. of cases. As a rule the disturbance is a voluntary paralysis; there is no atrophy in the muscles, and the jaw jerk is always active. Both sides are usually involved with the loss of power somewhat more marked on one side than the other. Five cases have been reported in which the patients suffered from a distinct trismus and two in which the pterygoids alone were paralyzed.

Although the innervation of the oculo-motor apparatus does not pertain exclusively to the bulb, it will be convenient to consider the disturbances of that mechanism in this connection. Paralysis of the muscles of the eyeball occurs in sixteen per cent. of cases and is generally unilateral. Unilateral ptosis and unilateral internal strabismus are the most frequent disturbances. In a few cases the ptosis and internal strabismus are bilateral. Other muscular defects which have been described are complete bilateral ophthalmoplegia, bilateral divergent strabismus, paralysis of conjugate movement to the right or to the left, and nystagmus. In five per cent. of cases the pupils are unequal and in two per cent. the light reflex is absent.

Laughing, Crying and Mimetic Expression.—The emotional tone of the individual undergoes a marked change in fifty per cent. of cases. This disturbance does not occur in two per cent. while in the remaining forty-eight per cent. no definite statement could be found concerning it. In a third of the cases the disturbance is characterized by attacks of uncontrollable, prolonged laughter which, as a rule, comes on without any of the usual provocations. The laughter itself is not necessarily expressive of the patient's emotional state and most frequently is inopportune. Its foolish, spasmodic character gives the impression, at first glance, that the patient is feeble-minded or demented. In the paroxysms of laughter, the facial expression, even in spite of the voluntary paralysis of the face, is characteristic; the body and limbs shake; in the more severe cases one or both legs may pass into active clonus and to all appearances the patient is convulsed with laughter; yet he may not experience any of the emotions which all of these motions usually combine to express. The laughter has been described as "paroxysmal," "spasmodic," "automatic" and "epileptic." The laughing sounds may be produced by a protracted inspiration under the influence of the diaphragm; the voice, at first high and penetrating, gradually becomes inaudible; this is followed by a series of short sounds caused by rapid inspirations and expirations, after which the long inspiratory spasm begins again. In many cases this prolonged spasm does not occur. During the paroxysms associated movements are observed in the paralyzed extremities. Even when a hemiplegia has almost entirely cleared up, the affected side may be easily determined by observing the position of the limbs during a laughing fit; the extremities assume the typical hemiplegic postures, especially on the side most severely paralyzed. The laughing fits may last several minutes and occur many times in the day. Dyspnea, Cheyne-Stokes respiration or tachycardia generally follows the attacks and tends to become progressively more pronounced.

Crying spells occur in a large number of cases. In their general character they resemble the laughing fits. They do not always express the actual emotional state of the patient and are seldom occasioned by the usual provocations. Both laughing and crying spasms occur in many cases. This condition has caused a number of writers to describe their patients as highly emotional, although they have not appeared to recognize the specific charac-

ter of the symptom. In a small percentage of cases mimetic expression is unusually active. Even though a well-defined facial paralysis is present, the patients are continually grimacing, protruding the tongue and lips, scowling and frowning.

The frequency of the several disturbances of the emotional tone is shown below:

	Per Cent.
Laughing and crying	17
Crying	16
Laughing	15
Excessive mimetic expression	2

Other Symptoms.—The mental status is disturbed in something more than one quarter of the cases. Twenty-four per cent. of these cases are demented, two per cent. are maniacal and three per cent. imbecilic. These cases are often classed as organic dementias. The mental derangement together with the fits of senseless laughter might readily lead the observer to a diagnosis of this sort—in itself essentially correct but needing further specification to be exact. The foolish laughter alone, in not a few cases, has given the impression of a much more profound mental disturbance than actually existed. It is probably safe to say that some cases of pseudo-bulbar palsy have been classed under the rather general term of organic dementia.

The general body sensation and special senses are rarely affected. In all, only fourteen cases showed any involvement of the sensorium; six of these presented a typical hemianesthesia. Cases showing an anesthesia of the tongue or face, anesthesia of the pharynx, paresthesia of one side of the body, deafness, loss of olfactory sense and homonymous hemianopsia have also been reported.

Salivation is mentioned in connection with thirty-seven per cent. of cases. Undoubtedly the disturbed condition of deglutition has much to do with the constant escape of saliva from the mouth. On the other hand the great quantity of the fluid makes it seem likely that there is an actual increase of salivary secretion. This symptom is aggravated during the fits of laughing and crying.

The reflexes, in only one case, were described as being reduced. As a rule the reflexes are unusually active and the muscles hypertonic. This increased reflex excitability is generally more marked on one side of the body than the other. Certain reflexes

which under normal conditions do not usually appear, are frequently observed, as for example the radial and ulnar reflexes, the jaw jerk, the malar and Babinski reflexes.

Four cases presented athetosis and two had marked chorea.

A few cases are reported in which the muscles of some part of the body have atrophied. The explanation of this condition is to be found either in the fact of a long continued disuse or else a pathological focus in the cord or brain stem. The muscles of the hand wasted in three cases; in two cases the thenar eminences were similarly affected; in two other cases the left side of the tongue was involved. In one case all four extremities atrophied; this was due to a congenital diplegia. In another case, also congenital, the legs alone wasted.

No record of the reaction of degeneration was found in any of the cases considered in this analysis.

Pathological Anatomy.—Pathological observations in pseudo-bulbar palsy are confined to a relatively small number of cases. The writers have been able to collect ninety-seven cases with post-mortem reports. A large proportion of these should be regarded only as contributions to the gross pathology of the disease, for the microscopic investigations of the brain leave much to be desired. In many instances the absence of any statement concerning the condition of the pons and medulla distinctly lessens the value of these cases as pathological evidence. Reports of the macroscopic findings in the pons, medulla and mid-brain, without microscopic control cannot be considered entirely satisfactory, since one of the essential questions in the pathology of pseudo-bulbar palsy is whether or not the nuclei or emergent fibers of the cranial nerves are involved. No answer to this question can be conclusive unless based on the study of serial sections of the brain stem. It is possible for lesions to exist in this part of the nervous system without affecting the cranial nerve nuclei. In that event the symptoms would be supranuclear and not nuclear. On the other hand, one or more of the cranial nerve nuclei may be involved. Such conditions would explain the mixed cases previously mentioned, i. e., cases in part nuclear and in part supranuclear in their symptoms. Obviously these points cannot be settled by macroscopic examination or by anything short of a study of serial sections. The analysis of the post-mortem reports from ninety-seven collected cases is, however, instructive in cer-

tain particulars. For example, it indicates the tendency of the lesions to be multiple and bilateral, and shows the locations in which lesions have been found as well as their pathological character.

In seventy-nine per cent. of cases the lesions were bilateral. Of these, eighty-four per cent., in addition to bulbar symptoms, presented an involvement of both sides of the body at some period during the course of the disease. In the remaining sixteen per cent. only one side of the body was affected.

Twenty-one per cent. of cases showed unilateral lesions yet in about one tenth of these the extremities of either side were paralyzed at some time.

The number of lesions in the bilateral cases is as follows:

	Per ent.
Cases with one lesion	1
Cases with two lesions	29
Cases with three lesions	13
Cases with four lesions	24
Cases with five lesions	6
Cases with six lesions	8
Cases with seven lesions	9
Cases with eight lesions	7
Cases with nine lesions	2
Cases with multiple sclerosis	3

The number of lesions in the unilateral cases is as follows:

	Per Cent.
Cases with one lesion	5
Cases with two lesions	48
Cases with three lesions	10
Cases with four lesions	22
Cases with five lesions	10
Cases with six lesions	5

The pathological character of the lesions is not constant. As shown by the following list, a variety of morbific processes has been observed.

	Per Cent.
Arteriosclerosis with hemorrhage or areas of softening	40
Atheroma of the basilar or other cerebral arteries with areas of softening	28
Syphilitic Endarteritis	14
Cysts	4
Multiple Sclerosis	3
Hemorrhage into both lateral ventricles	2
Tuberculous Meningitis	2
Pachymeningitis	2
Acute Encephalitis	1
Embolism of basilar artery with areas of softening	1
Aneurysm of basilar artery with areas of softening	1
Hemorrhage into third ventricle	1
Porencephaly and microgyria	1

The figures already cited show that the lesions are usually multiple, but the topographical combinations in which they occur are so variable as to make tabulation impossible. It is interesting, however, to note the numerous locations in which pathological foci have been found and the frequency of their occurrence.

In fifty-two per cent. of cases some part of the cerebral cortex was involved.

	Per Cent.		Per Cent.
Frontal Convolutions	27	Internal Capsule	31
Parietal Convolutions	10	External Capsule	4
Precentral Convolution	3	Cerebral Peduncle	9
Central Convolution	3	Pons	34
Occipital Convolutions	3	Medulla	16
Temporal Convolutions	3	Cerebellum	2
Isle of Reil	3	Lateral Ventricle	3
Lenticular Nucleus	53	Mid brain	1
Caudate Nucleus	32	Third ventricle	1
Optic Thalamus	25	Aqueduct of Sylvius	1
Centrum ovale	14	Spinal Cord	6

The corpus striatum, in some portion or all parts, was affected in sixty per cent. of cases; the basal ganglia, including the lenticular nucleus, caudate nucleus, and optic thalamus, presented one or more lesions in seventy-three per cent. of cases. The fact that twenty-seven per cent. of cases had no lesion in any part of the basal ganglia makes it incorrect to state that the essential lesion of the disease is in this region.

A strikingly large number of cases has records of lesions in the medulla or pons or both together (36 per cent.) About one half of such cases had pathological foci involving one or more of the cranial nerve nuclei. They are, therefore, examples of the mixed form of the disease. It might, perhaps, be expected that the pathological findings in cases characterized by such marked changes in the emotional tone would shed some light on the vexed question concerning the rôle of the optic thalamus and corpus striatum in emotive expression. This, however, is not the fact. The deductions based on the analysis of the post mortem reports seem to absolve the optic thalamus and corpus striatum of any responsibility for the characteristic laughing and crying spells or the changes in mimetic expression so frequently seen in pseudo-bulbar palsy.

Over one half of the cases, which, according to report, present no lesions in the lenticular nucleus, caudate nucleus or thalamus, have clinical records of typical laughing or crying attacks, while

one half of those cases with lesions in the lenticular nucleus, caudate nucleus or thalamus have no clinical records of such attacks.

Differential Diagnosis.—The symptoms of several other nervous diseases more or less closely simulate those of pseudo-bulbar palsy. Chief among these are myasthenia gravis pseudo-paralytica, true bulbar palsy, hysterical bulbar palsy, and polyneuritis involving the cranial nerves. The principal points of differentiation are given in the following table.

The following clinical reports afford typical examples of several forms in which pseudo-bulbar palsy may present itself.

Case I.—H. C., Kings County Hospital. Age 47. Born in U. S. Single. The family history is negative as to nervous, mental or muscular diseases, alcoholism or criminality. There was no injury at birth; health in infancy was good; dentition, walking and talking occurred at the usual age. As a child the patient had measles, scarlet fever, pertussis and erysipelas without sequelæ.

In adult life he had an attack of typhoid fever and one of rheumatism, the latter of which confined him in a hospital over nine months. Gonorrhea is admitted, but syphilis is denied and there is no history of secondary symptoms. He attended school from the age of six until fifteen, was a good scholar, and had no difficulty in keeping abreast of classmates who were of his own age. On leaving school he began to work as a driver for a fish dealer and, with short excursions into other occupations, such as bartending etc., he continued his connection with the fish and oyster business up to his present illness. The patient used alcohol, principally whiskey, to excess; was on a "running drunk" at the time of his first attack and ascribes his illness to alcoholic indulgence. For some few days previous to onset the patient had frequent headaches, mostly on the right side. At the age of 35 years, he was stricken suddenly, fell unconscious in the street, and was taken to a hospital; he recalls no circumstance of his admittance and believes he was disoriented for a week or more. On regaining consciousness he could not talk and could not move his left arm or leg. At this time a keratitis (whether of trophic or traumatic origin cannot be determined), produced a permanent opacity of the right cornea. Speech gradually returned with some control over the arm, but he regained little power in the leg and has not been able to stand unaided since that time. About one year later a second, less severe attack caused some increase in the paralysis and speech defect, but patient regained in a few days or weeks what he had lost in the second attack and continued to show improvement. More recently a

DIFFERENTIAL DIAGNOSIS.

Disease.	Onset and Course.	Paralysis of Extremities.	Emotional Disturbance.	Muscle-tone and Reflexes.	Electrical Reactions.
Pseudo-bulbar palsy.	Sudden, often apoplectiform. Repeated attacks. Improvement in intervals.	Hemiplegia, diplegia or paraplegia, tendency of paralysis to shift from one side of body to other.	Paroxysmal laughing and crying. Mimicry increased occasionally.	Muscles hypertonic. Reflexes increased.	Galvanic and faradic responses normal.
True bulbar palsy.	Gradual, becomes progressively worse.	Flaccid paralysis of arms frequent.	None.	Muscles hypotonic and wasted. Reflexes diminished or lost.	Typical reaction of degeneration in affected muscles.
Myasthenia gravis pseudo—paralytica.	Gradual, periods of exacerbation and remission.	Ingravescent paresis in arms and legs caused by exertion. Relieved by rest.	None.	Muscles hypotonic after repeated contractions. Reflexes easily exhausted.	Myasthenic reaction of Jolly in affected muscles.
Hysterical bulbar palsy.	Sudden or gradual marked suggestibility and other hysterical stigmata.	Hemiplegia, diplegia or paraplegia occasionally.	Various emotional disturbances of a hysterical nature.	Muscles usually hypertonic. Reflexes increased.	Galvanic and faradic responses normal.
Polyneuritis involving cranial nerves.	Sudden or gradual. Febrile course attended by much pain and muscle tenderness.	Flaccid paralysis of legs and arms. Toe and wrist drops.	None.	Muscles hypotonic, considerable wasting. Reflexes diminished or lost. Contractures common.	Galvanic and faradic responses greatly reduced De. R. frequent.

third attack, similar to the second, occurred with similar result. The patient thinks he was not unconscious during these two later attacks and considers them very mild in character.

Immediately after the first attack the patient gave way to severe and uncontrollable outbursts of laughter, which were excited by little or no stimulus of a humorous nature. He did not feel particularly happy even when convulsed with laughter.

Physically, at present, there is an increase in all tendon reflexes in left arm and leg over those in the right, although the latter are hyperactive. There is left ankle and knee clonus and the Babinski reflex is present on both sides. The right patellar reflex crosses to left. All the muscles of the right arm and leg are apparently normal and skilled movements show no abnormality, but movements on the left are limited in extent, unskilfully performed, and, if made against resistance, usually attended by a clonus. General sensation is normal save by the presence of astereognosis of the left hand.

The first and second cranial nerves are normal. There is bilateral nystagmus and upward rotation of the eyes is apparently impaired. A note made April 20, 1906, states that "only lateral movements of eyes are preserved; patient cannot look up or down." The fifth nerve seems uninvolved.

His power of mimicry of the left side of the face is deficient as compared with the right. When told to make a face he says he cannot do it. He says "I have power to make a face but do not know how to get at it on either side." When told to close one eye and then the other he can do so and can also purse his lips to whistle or suck water through a tube. In elevating the eyebrows the left lags behind the right. In repose there is a suspicious flattening of the lines on the left side of the face and during conversation the play of expression is much more marked on the right. On the other hand, during attacks of laughter, both sides are equally expressive of risibility.

The tongue protrudes slightly to the left; this deviation, judging from the history notes, is less marked than formerly. The tip of the uvula is in the mid line and the pharyngeal reflex is present on both sides.

The patient uses great care in masticating his food, always soaks his bread in his coffee and in every way takes precautions to avoid choking, since he realizes that he has not the control of his pharynx that he formerly had.

His speech has a nasal quality that was not present before his attack, but aside from this defect he is able, if speaking slowly and deliberately, to give correctly the value of all syllables. On the other hand, if speech is hurried or prolonged it becomes less distinct. This is due in a measure to the dyspnea which accompanies hurried or lengthy sentences, and to the patient's inability to care properly for the saliva which in so many of these cases seems increased.

His attacks of laughter occur at intervals of from two to thirty minutes, last from thirty to ninety seconds and are entirely beyond his control. He does not feel unduly happy, laughs at bad news as well as good and cannot shorten the attack. An attempt at the faintest smile invariably leads to an attack of laughter. The left arm and leg are involved in all attacks, sometimes by increased tonicity only, usually by a clonic seizure in which the heel of the patient's shoe beats a loud tattoo upon the floor. Accompanying the attack there is a clonic spasm of the diaphragm ending in a tonic spasm with resultant dyspnea and flushing of the face.

The laryngoscopic examination is negative. The eye grounds show no abnormality; the urine is normal, the blood pressure is 120 mm. and the blood count and hemoglobin percentage are normal. The radials show moderate sclerosis. The heart is irregular in force and rhythm (which becomes fetal in character after prolonged laughing attacks) and there is a systolic murmur at the apex, not transmitted. No reaction of degeneration, no atrophy or fibrillary tremor is present in any of the involved parts. He shows no mental deterioration.

Case II.—C. von G., Kings County Hospital, is a well-developed male, 39 years of age, of American birth and German parentage. His father is confined in a state hospital for the insane and an uncle committed suicide. The patient's birth was normal; his development in infancy was without abnormality; teething, walking and talking occurred at the usual ages and he had no convulsions, spasms, or fainting attacks. He had few of the diseases of childhood and these without sequelæ. At nineteen he suffered from an attack of typhoid fever from which there was perfect recovery. He admits gonorrhea but denies syphilis, gives no history of secondary symptoms, and his wife's parturient history does not suggest syphilis. He attended school until the age of fifteen, had no difficulty in keeping abreast of his classmates, and after a course in business college secured a position in a bank when he was about the age of sixteen. In adult life the patient smoked to excess and he admits the excessive use of intoxicants although never to the extent of causing him to lose his position in the bank.

The histories of his present illness, obtained from several sources, differ somewhat in minor details, but the following is approximately correct. At the age of 22, while at his work in the bank, the patient suddenly became unconscious and remained so for about half an hour. On regaining consciousness it became evident that the left side of his face and left arm and leg were paralyzed and that there was considerable difficulty in speech, the character of which it is impossible to determine. This speech defect persisted for but one week and at the end of two or three weeks, when the patient returned to his former position and sal-

ary at the bank, there was no asymmetry of the face, weakness of face, arm or leg, defect in skilled movements, change in voice or ease and clearness of speech, change in character or mental deterioration apparent to mark this first insult to the central nervous system. In about two years a second attack occurred, this time involving the right arm and hand, the use of which the patient never entirely regained. The history of this second attack is meagre and we are not sure that the patient was unconscious, that more than the upper extremity was involved, or that there was any speech defect. We are certain that there was no difficulty in swallowing or change in voice, that there were no attacks of laughter, and that the only residual symptom apparent on his return to the bank was some weakness in the right upper extremity and possibly some stiffness or weakness of the right leg. The patient remained at home for six weeks at this time, and although he returned to the same position and pay he was never able to perform his work as satisfactorily as formerly and in 1898 he was asked to resign. This request is supposed by his mother to have brought on his third attack. He was picked up unconscious on the street and taken to jail, supposedly in a drunken stupor. A day or two later, on being transferred to a hospital he talked "very stupidly" and did not seem to understand the purport of questions. He had no delusions or hallucinations but acted "very foolishly." His wife states that following this attack he became forgetful, speech became difficult and gait became spastic. A short history taken on Nov. 14, 1898, on patient's second admission to the hospital states that he "talks but little, seems to understand fairly well but is unable to answer well." "Reflexes are exaggerated and gait is spastic." He was discharged from the hospital with a diagnosis of dementia paralytica. The mother of the patient states that attacks of laughter, difficulty in swallowing, loss of vision in one eye, difficulty in speech and weakness in the legs were striking features of this attack. The patient was confined to bed for several weeks but gradually increasing control of his legs made walking possible. After being cared for at home for eleven years he was admitted to Kings County Hospital, September 8, 1909. At this time brief notes show that the right palpebral fissure was wider at all times whether the patient was laughing or the face was in repose. The left arm was carried in an athetoid manner and there was double ankle clonus. In walking the patient leaned forward, walked in a spastic manner, and the left foot toed in more than the right.

A recent physical examination shows the following: the jaw, biceps, olecranon, radial, wrist, scapular, patellar, cremasteric, epigastric, abdominal, and the bulbocavernous reflexes are greatly increased but equally so on the two sides. The cilio-spinal is absent on both sides, as are also the Babinski, Gordon and, on

the right side, Oppenheim's. Ankle clonus is present on both right and left sides and there has been in the past a jaw, wrist and patellar clonus. The lower extremities are hypertonic and the upper ones also, though to a lesser extent. Skilled movements of both arms and legs are deficient, yet the patient coöordinates well if allowed to take his time. A coarse tremor is present in both hands, especially if movement is attempted against even a slight resistance. There is a tendency to associated movements. The gait is columnar with a tendency to cross-legged progression and the left foot toes in more than the right. He walks with a decided shortening on the right side, the right arm swings loosely with the stride but the left is held partially flexed and adducted. Schilling's side gait shows better progression to the right than the left. There is no atrophy nor fibrillary tremor present and no swaying in the Romberg position. There is no change in the general sensation.

The first cranial nerve shows no abnormality. A left homonymous hemianopsia is present; this is probably the "blindness in one eye" noted after the third attack; the eye grounds are normal.

The left palpebral fissure is uniformly narrower than the right whether the patient's face is in repose or in a paroxysm of laughter, yet the left eye can be opened as wide as the right if he makes the attempt. The eyeball moves freely in all directions and there is no impairment of the pupillary reflex; no nystagmus or strabismus. He cannot close either eye separately and when he closes them together other muscles of expression are brought into play; if these latter are not brought into play the eyes close weakly and the lids show tremor. When asked to wrinkle his brow or frown he is not able to do so, yet in involuntary associated movement he moves them freely. When told to elevate the angle of his mouth (or to imitate that act) he accomplishes very slight movement. When told to whistle he makes vain efforts to purse his lips. On the other hand, during his laughing attacks, all the muscles of expression are brought violently into play. Drooling of saliva is almost constantly present. The fifth cranial nerve is apparently uninvolved. Deglutition is performed very deliberately and he coughs and chokes frequently unless the solid food is well broken up, or bread soaked in fluid. In drinking water there is a very perceptible pause after the water is taken into the mouth before the muscles of the pharynx are brought into play. The uvula hangs in the mid line and both pharyngeal reflexes are present. The tongue is protruded in the mid line but only slightly beyond the teeth; other movements of the tongue are performed well though very deliberately. Speech is nasal in quality, high pitched and without body; it can be understood only by approximating the listener's ear to the patient's lips. If he attempts more than three or four syllables at a time

his speech becomes mangled and indistinct. The patient apparently has equal difficulty in pronouncing linguals, dentals and labials, and he never attempts speech without first taking a deep inspiration. His attacks of laughing are characteristic. They occur at frequent intervals, are excited by little or no stimulus, cannot be abolished or cut short, and when most severe involve the entire body musculature either by increased tonicity or by actual clonic movements. These attacks leave the patient somewhat dyspneic. The laryngoscopic examination is negative save "congestion of vocal cords."

The radials show a rather high degree of sclerosis; the blood pressure is 140 mm. The heart is rapid but no adventitious sounds are heard. The blood and urinary examinations reveal no abnormality and the Wassermann reaction is negative. There is no reaction of degeneration present in any of the involved parts. The patient shows some mental deterioration, though far less than his general appearance, constant drooling and senseless laughter would suggest.

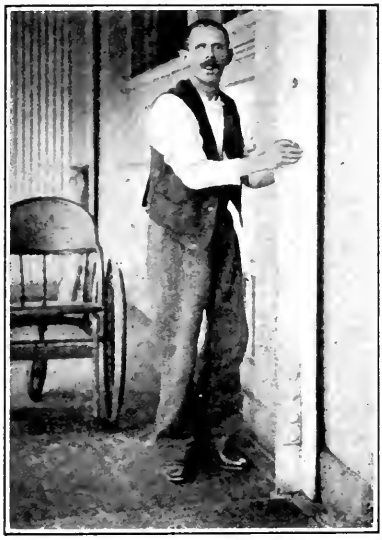
Case III.—J. T., Kings County Hospital, is a well-developed male, 50 years of age, a longshoreman, of Irish birth and parentage. In his family there is no history of nervous, mental or muscular disease, suicide or criminality.

Nothing is known of the character of the patient's birth or of his development in infancy, but he states that he was always strong and robust and recalls no severe illness in childhood or early adult life. He received a common school education and although never considered a brilliant student believes that he averaged well with his classmates. He served in the English army in Egypt, Bermuda, and other places from 1876 to 1883 and since coming to the United States has worked as a rope maker, cook, and laborer. He denies venereal disease but states that he has always used intoxicants to excess and has been "in trouble" very frequently because of drunkenness.

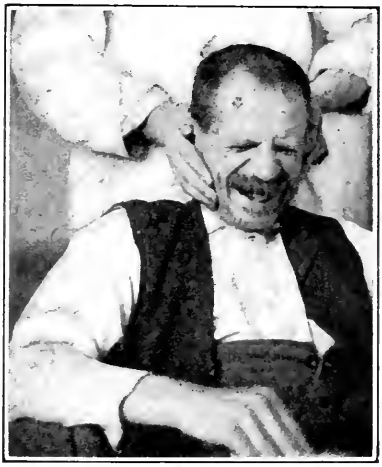
The onset of his present illness was sudden in character and occurred when the patient was 37 years of age. The first symptom noticed was double vision which has been constantly present since that time. One month later the patient noticed that he could no longer play the flute, an instrument upon which he could previously perform well. This trouble the patient ascribed to difficulty in control of the movements of the tongue and lips. About this time his friends told him that his speech was slow and broken, a defect that he had not realized. The patient's friends at first thought that he was almost constantly intoxicated. About one year after the onset his head began to shake and his hands and legs became unsteady. He had no pain, burning sensation or stiffness of any kind, but he gradually became unable to walk due to double vision and difficulty in moving his legs.

A recent physical examination reveals the following: the jaw,

CASE 1



CASE 2



CASE 1

CASE 2

biceps, olecranon, radial, wrist, scapular, patellar and ankle reflexes are all increased but equally so on the two sides. Gordon's, Oppenheim's and Babinski's reflexes are absent. The epigastric and abdominal reflexes are about normal but the cremasteric responds very little if at all. No clonus is present save a transitory ankle clonus on the left side which is not present at all examinations. Skilled movements are deficient in both upper and lower extremities; coördination is poor, there is no change in the volume of muscles, no fibrillary tremor, and strength in the arms is well retained though somewhat diminished in the legs. The patient cannot stand or walk unaided and falls when placed in the Romberg position whether his eyes are closed or open. Gross, slow oscillations of the head, arms and legs are sometimes present when the patient sits quiescent, but are nearly always present when resistance to passive motion is attempted. These oscillations are most marked in the right hand or when the patient is disturbed emotionally, and are coarser and slower than those usually seen in multiple sclerosis or paralysis agitans. Previous to this examination no change in general sensation has been elicited; at present the patient states that he feels "numb all over." The first and second cranial nerves show no abnormality. The eye grounds are normal, the pupils react directly and consensually to light and to accommodation and the cilio-spinal reflex is present. Slow, lateral nystagmus of both eyes is present and marked weakness of both external recti, so much so that the patient keeps one eye closed to prevent double vision. There is no weakness in the other ocular muscles. Both corneæ have diminished sensibility. The face is symmetrical and the patient's power of mimicry is fairly well preserved, although more muscles are brought into play than are usually necessary in facial movements. He purses his lips weakly and his whistle is feeble, broken, and accompanied by drops of saliva. The muscles of mastication show no paresis. The patient eats with deliberation since he is experiencing increasing difficulty in swallowing unless smaller quantities are taken. The uvula hangs in the mid line and the pharyngeal reflexes are present. The tongue protrudes in the mid line, shows no fibrillary tremor and there is no limitation of movement in any direction although it moves with deliberation. His voice is a monotone and his speech is slow and scanning.

It is difficult to understand the patient not only because of the bulbar character of his speech but also because of the quantity of saliva always present and drooling from the angles of his mouth. Attacks of laughing or crying with little or no stimulus occur frequently. The patient states that he does not feel particularly happy or sad and does not know why he indulges in these paroxysms. The attacks of laughter leave the patient somewhat dyspneic.

Laryngoscopic examination reveals the vocal cords in normal position. The radials show marked sclerosis but the blood pressure is only 125 mm. The heart sounds are clear. The blood and urinary examinations reveal no abnormality and the Wassermann reaction is negative. No reaction of degeneration is found in any of the parts involved. The patient shows little mental deterioration.

Case IV.—F. G., Kings County Hospital, is a well-developed male, 48 years of age, a clerk by occupation. The patient's father died of "heart trouble" and his mother of apoplexy. Nothing more is known of his family history and nothing of his birth or development in infancy. Nothing is known of his history previous to his present illness save that he had measles as a child and pneumonia in adult life. He has had no venereal disease but has used whiskey and beer very freely. He is "well educated."

The present illness began suddenly in December, 1907. The patient on retiring was perfectly well but the following morning he was unable to arise and dress himself, could not speak, and refused food. He was found to be paralyzed on the right side. He slept most of the time at first, but later became restless as he gradually regained some power over the right side. He never returned to work and "on taking liquor was liable to have another attack." The second severe attack occurred December 14, 1908, and was similar in character to the first. He was brought to the hospital in a stupor three days after the onset, remained in a semistupor for about one month and was in bed for three months.

Some notes on his physical conditions made at various times since his admission are as follows: No response from patient and he cannot be persuaded to whistle or wink his eyes. Patient in state of hypertonia; arms in spastic condition and all reflexes present; no clonus. Patient absolutely aphonic; laughs and cries mechanically; is restless and inclined to wander all the time. When asked to hold up right or left hand, index or little finger, patient can do so. Indicates that he has a wife but no children. Cervical glands not enlarged. Jaw jerk present on both sides. Achilles' reflexes and brief ankle clonus elicited on both sides. Pupils equal and react to light. Patient urinates in bed regardless of when he goes to the toilet. He has increased materially in weight since his residence in the hospital.

A recent physical examination shows the following: The olecranon, radial and wrist reflexes are increased but equally so on the two sides. The jaw, biceps, scapular, knee and ankle reflexes are likewise increased but more so on the right side than on the left. The cilio-spinal, cremasteric, epigastric and abdominal reflexes are normal on the two sides. The Babinski reflex is absent and no clonus can be elicited save at the ankle, where a permanent

clonus is present on the right side and a transitory clonus on the left.

Muscles of the upper and lower extremities are hypertonic, those of the right side more so than the left. There is no atrophy, no fibrillary tremor and no reaction of degeneration. Skilled movements are deficient, but there is less loss of power in simple movements of flexion and extension than one would suppose from inspection without examination. The patient walks slowly with short halting steps, pauses a long time before attempting to step up a distance of even three inches, and relies more upon the left leg than upon the right. In the Romberg position he falls unless supported, but is equally unstable, whether his eyes are open or closed. The backward and side-step gait are impossible without assistance.

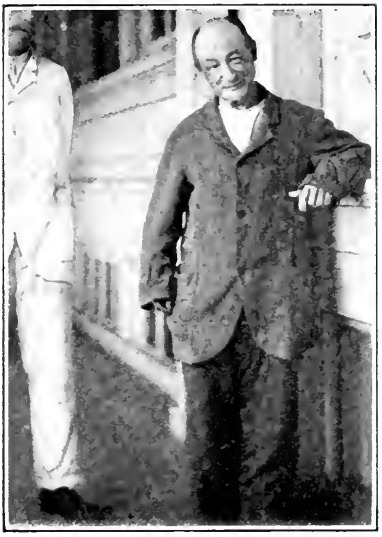
The patient's mental deterioration and his speech inability render an examination for general sensibility unsatisfactory, but apparently there is no change in the sensory field. The first and second cranial nerves are normal and the retina shows no change. Both pupils are irregular, the left is larger than the right, but both react directly and consensually to light and to accommodation. There is no nystagmus and no limitation to eye movement. Attacks of laughing occur with such slight stimulus that it is impossible to determine whether the patient can wrinkle his forehead, whistle, etc., as attempts to do so invariably lead to laughter, in which all the muscles of expression are drawn sharply into action. An attempt to wink one eye was in vain. The face is mask-like with more ironing out on the right side than on the left. In attacks of laughing, however, the muscles of expression are drawn sharply into play and a much wider range of movement is possible than in voluntary efforts at facial expression. In the most violent attacks of laughter, however, the weakness of the right side of the face is evident by comparison with the left. The attacks of crying are not so frequent as formerly but still occur. The patient drools saliva constantly, principally from the right angle of the mouth.

Deglutition is performed slowly and is accompanied by coughing and choking unless the patient takes great care in masticating and in moistening his food. He coughs frequently as if attempting to clear his throat of the accumulation of saliva. The tip of the tongue can be protruded just beyond the teeth; it points slightly to the right and its movement in other directions is diminished. It shows no fibrillary tremor.

The patient cannot utter a single word; the sounds he makes are not unlike those made by an idiot without speech. He attempts, however, to reply to such questions as can be answered by yes or no, but the resultant sounds bear little resemblance to the words attempted and differ from each other but little.

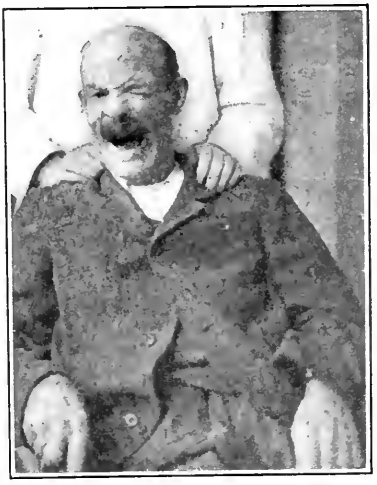
The uvula hangs in the mid line and the pharyngeal reflexes

CASE 3



CASE 4

CASE 3



CASE 4

are present. Laryngeal examination is almost impossible and is very unsatisfactory. No reaction of degeneration is present in any involved part.

The blood pressure is 150 mm. and the arteries show moderate sclerosis. A murmur accompanies the first sound at the base of the heart. The blood examination reveals no abnormality and the Wassermann reaction is negative. The patient exhibits considerable mental deterioration.

Case V.—The patient in this case is a young woman now 22 years of age and naturally right handed. For several months prior to the onset of her trouble she had complained of an increasing difficulty in writing, a condition which she was told resembled writer's cramp and which seemed to be aggravated by worry over her school work. In her fifteenth year she suddenly became unconscious without warning or prodromata of any kind. Consciousness did not return for several days and, when it did, the patient was found to be completely paralyzed on the right side of the body. She had also lost the power of speech. Ten days later a second attack occurred, in which the patient again became unconscious. The left side of the body now became paralyzed, deglutition nearly abolished, voluntary control of the lips lost and phonation greatly impaired. The right hemiplegia followed so shortly by the paralysis of the left side produced such an extreme degree of diplegia as to render the patient quite helpless. The reflexes on both sides of the body were increased; all the muscles were hypertonic and contractures in the legs and arms soon made their appearance. Following her second attack she developed attacks of laughing and crying which have persisted to date. For some months after this attack the temperature showed a slight but sustained elevation and the patient was kept in bed. She developed several obstinate bed sores and fell in weight from 160 to 88 pounds. At the end of two years it was possible to place her in an invalid chair, where she could sit up if properly supported. At the present time, nearly six years after the appearance of the first symptoms, she is still unable to use her legs or arms voluntarily except to perform very imperfect movements. All the reflexes in the upper and lower extremities are active, while the contractures in the muscles have produced marked deformities in the positions of all the major joints. Speech, which at first was lost, has in small part returned. The patient's attendants and family understand what she says but articulation is flat, nasal and slurring. The labial muscles are not under the control of the will and the mouth hangs open; this latter is in part due to a weakness in the muscles of mastication. When the patient laughs or cries, however, the action of all of the facial muscles appears to be normal. Swallowing, especially of dry or hard foods is difficult and occasionally regurgitation through the nose occurs. Voluntary control of the tongue and

larynx has only in part been regained. The muscles of the eye have never been affected; vision and hearing are normal. The mentality has not suffered the slightest impairment. Respiration is difficult at times even to the extent of slight attacks of dyspnea. An increased flow of saliva is a prominent symptom. The trophic condition of the skin over the entire body is now excellent; the patient is gaining weight and strength. The limbs of both sides are much wasted from disuse and contractures, but all the muscles of the body respond normally to the galvanic and faradic currents. The reflexes of both sides are very active. A bilateral jaw jerk is present as are also the pharyngeal and conjunctival reflexes. In the early part of the disease it was believed that the condition was due to tuberculous meningitis. The cerebrospinal fluid was examined microscopically but found to contain no bacteria. Agar agar and beef tea cultures of the fluid were negative and two guinea pigs injected with it were both healthy when killed several months later.

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ALZHEIMER'S DISEASE (SENIUM PRÆCOX): THE REPORT OF A CASE AND REVIEW OF PUBLISHED CASES

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(*Continued from p. 455*)

III

(Sarteschi's case.[1])

. . . A woman, 67 years of age, pensioned overseer of an infirmary, admitted to the insane hospital April 22, 1907.

Her physician sent this history: "For about 2 years she has been taciturn, melancholy, shown a tendency to somnambulism (sic) rises at night and tries to go out of the house. The first symptoms were talking to herself and a tendency to go out of the house alone, especially at night."

This woman had been an overseer of an infirmary and an attendant in an insane hospital for about 30 years, until the beginning of 1901. The physicians and all the personnel remember her as a woman of excellent character, fair intelligence and honest habits. Physically she was always healthy; no history of the usual diseases. In the early part of 1901 she got a splinter in her right hand necessitating an incision and painful treatment. She was then granted a pension and placed in a family at Lucca. After 3 years (1904) the disturbances reported above by a certified physician began.

On April 22, 1907, she was sent to the insane hospital.

Physically there was nothing of importance. Mentally her condition uniformly until the day of her death, may be described thus:

She presents a pleasant face, is complacent, attentive and always affable and polite. When the physician passes she rises to her feet saying, "Good day, signoria." When asked "How are you?" replies, "Well, and how are you?" and when the conversation ends she withdraws saying, "Come again and thank you, it is impossible to know such things as you wish, excuse me and thank you again." Invited to be seated she fences and gracefully invites the sister who accompanies her to sit instead. Often during the conversation she turns to the sister who is standing and repeats courteously the invitation "Pray be seated."

Asked her name, she responds with name and surname. To

[1] The translation of this case from the Italian was done by Stella B. Shute, A.B., assistant in histology, Westborough State Hospital.

all the other questions which relate to her personal history and orientation for place and time, replies "I do not know, truly I do not remember, I don't remember just now," adding to this constantly confabulations.

D. How old are you?

R. "I shall be 30"; (at other times) "I don't remember just now . . . the papers have it no more. At times I will go up in the direction when they call me." (At other times) "I will be 30 or 20, I will say so too, I said I don't remember anything."

D. But do you not know, on the contrary, that you are 67?

R. "Sixty-seven? no, I must be less; even there in San Romano so many times those young lads have called me . . . I know those lads . . . I wish to know no more of them."

D. Then how old are you?

R. I haven't passed 40.

D. How old did I tell you you are?

R. I do not remember.

D. Whose daughter are you?

R. I do not remember any more; of one a once mean . . .

D. Have you ever seen your father?

R. He came once; I told him to go away; what is there to come for?

D. Then you know your father?

R. Why I have never spoken to him.

D. Have your father and mother come to see you?

R. A few times . . . sometimes they came.

D. What is your occupation?

R. I tend the cows, the sheep, also the stalls where the animals are kept . . . I clean; (at other times) I had as many trades too in Livorno.

D. Do you know what month it is?

R. Really I don't know.

D. Is it May?

R. Yes it will be.

D. What month did I say it was?

R. Oh, I don't remember that.

She seems continually busy as if she were still overseer of the infirmary. When not restrained or led away, she goes to do the cleaning in the water section so that it is continually necessary to drag her away from it; she searches for the key which she says she has lost, and starts to remake the beds already made. She also has the habit of collecting things; she occupies herself in the garden for long periods of the day in gathering small stones upon a bench and suddenly throws them away when the physician sees her.

A few days before death, she became suddenly taciturn, did not reply to questions and remained often motionless. She became weaker without presenting a high fever, and died after three days, on the 28th of January, 1909.

IV

(Perusini's Case II.)

R. M., a basket maker, 45 years old, was admitted to the psychiatric clinic (Munich) Sept. 21, 1907.

A brother was not quite right. The patient himself was always sickly. He had never drank much and denied luetic infection. He is the father of 3 healthy children and his wife had never miscarried. About 10 years ago he had an inflammatory skin disease. Since 1899 a change in him has been noticed: he couldn't work, claiming that he could not see. He forgot easily —when he laid his tools down he could not find them a few minutes later and he would scold the children, charging that they had taken them away. He became easily irritated by small matters; was noisy and cried out; would bang his head against the wall or bed-post and of late could do nothing, for when he began anything he soon became confused and got things mixed. For some little time he could not retain his urine and micturated indiscriminately in the room or in his socks. There were never any convulsions with loss of consciousness, but in the last few days there had been frequent cramps in the hands and feet. He would often say, "I can not eat, better I went in the water and at least leave you alone." He made many complaints.

Sept. 21, 1907. Small, poorly nourished and looks his age (45). Internal organs negative for pathological findings. Patellar reflexes active; sensibility intact; pupils very narrow and react very sluggishly to light and accommodation. Coarse tremor of the hands; tongue muscles without tremor. Speech is drawling with noticeable articulatory disturbance; complete disorientation for place and time. Reckoning ability is very poor: $2 \times 6 = 14$, $3 \times 6 =$ — "I must write that down again, I am as stupid as an ox." What is the name of the German emperor? "I can't recall his name." Who is Prince Regent of Bavaria? "Leopold."

A number of 3 figures given him to remember he could not recall a half minute later. He stated that for a year he had not been able to work for the reason that he got things mixed. With reading and writing tests he was put to his wits' end. "If you gave me a thousand marks I couldn't write." He had never heard voices, nor had ideas of influence.

Oct. 9, 1907. Marked apprehension. He sees the devil in the corner; prays aloud and hides himself under the bed-clothing.

Oct. 25, 1907. Continues apprehensive; is depressed and cries frequently.

Oct. 30, 1907. Could not name obects: Ring = "That is something to stick in, I don't remember what it is—a glove." He could not state the total value of a few small coins.

Nov. 11, 1907. Continuous marked apprehension. He hides himself under the bed cover and is abusive in speech. He fol-

lows the physician through the ward and tries to go out with him; sees the devil standing in the corner. He continues mentally accessible, but is disoriented for time and place. He complains of difficulty in thinking and that he can remember nothing. Handwriting is ataxic with letters left out or misplaced, and quite illegible.

No increase of cells in the cerebro-spinal fluid (3 cells per c.mm.). In the examination of the blood serum no complement deviation. Pulse pressure 90—105.

Nov. 18, 1907. No change, continues apprehensive. Transferred to Eglfing hospital.

Nov. 21, 1907. Continuous apprehension; is confused. He walks the ward for hours at a time; unable to find his bed; often refuses food and is untidy.

Nov. 22, 1907. Smears himself with feces and evidences no sense of shame.

Nov. 30, 1907. Scarcely answers any questions; makes many complaints and is completely disoriented.

Jan. 14, 1908. Epileptiform convulsions with initial outcry, tonic and clonic spasms.

March 27, 1908. A little accessible mentally. He hides himself under the bed cover. Rapid physical failing.

April 3, 1908. Exitus letalis.

V

(Perusini's Case III.)

B. A., a woman, 65 years old, was admitted to the psychiatric clinic (Munich), March 9, 1907.

A sister was insane. The patient herself had always been well. She had been married but never had children and no miscarriages. For 15 years she had suffered from an edema of the legs. Since the death of her husband 15 years ago she had successfully conducted an establishment for the manufacture of liqueurs. For the last 3 years as the result of her mental affection she had been despondent. The present condition is said to be of recent origin. She has had no apoplectic attacks, no attacks of dizziness. Gradually her memory has weakened, comprehension failed and she has given away many of her belongings. She became disoriented for time and place; had no grasp on her surroundings; appeared confused; and of late had been excited. She talked a great deal and cried out loudly.

March 9, 1907. She looks her age (65), is remarkably small, presenting a broad nose with sunken bridge, very thin face, scant hair, short thick fingers and a somewhat cretin appearance. Pupils react to light, though sluggishly; accommodation tests can not be carried out. Patellar reflexes are present. The lower legs are markedly swollen, of the nature of an elephantiasis. She can walk only with difficulty; exhibits, however, no evidence of

paralysis. The heart's action is regular. On account of extreme resistiveness a complete examination is impossible. The urine contains a trace of albumin. She is very active, elated and euphoric. Speech content as follows: "Gutele, Memele, Mutele, ja gute, Memele, Mutele, ja so schön, so schönele." Other than this nothing is to be gotten from her. To all questions she repeats the above quoted words. Likewise when objects are given her to name she always says "Gutele, schönele."

March 10. It was determined by various means that she could hear and understood what was said to her. In contradistinction, however, she employed in speech only a few paraphasic words, e. g., "Schnäutzer" for Taschentuch and the ever recurring "Mutele, Mamele, Mutele, Gutele." At times she made characteristic smacking noises with the lips and wafted kisses to the physician. It was necessary to feed her, but to this she offered no resistance.

March 15. Under rest in bed and diuretic medicaments the edema has diminished considerably. A mild bronchitis.

March 21. Sleeps a great deal, even in the day time. No mental change. The speech content is the same as noted above. Transferred to Eglfing.

March 22. Pronounced silly euphoria. Prattles the same words constantly.

March 23. Fever; is unconscious. Consolidation of posterior inferior portion of left lung.

March 24. Exitus letalis.

VI

(Barrett's case.)

E. T. Until he was 48 there had been no mental disturbance. At this age he complained of not feeling well and consulted a physician. The nature of this trouble is not known. When he was 50 it was observed that he would give "foolish" and incorrect replies during conversation. "When asked to do something he would not know how to go at it." Five years later the disturbance had become more marked. He became unable to write. He frequently lost things. He would sometimes ask for objects which lay directly before him. In talking he often used the wrong words, and after he was 67, it became impossible to understand his conversation. At 68 he became a patient in the Michigan Asylum at Kalamazoo. The physical examination at that time showed marked arterio-sclerosis and irregular heart rhythm. Neurologically there was slight asymmetry of the face; Romberg symptom; staggering gait; the tongue was tremulous and deviated to the right; the pupillary reactions were sluggish; the knee jerks unequally exaggerated and there was slight ankle clonus on both sides; there were no peripheral abnormalities of the eyes, except arcus senilis, but it was noted that he appeared

as if blind; when asked to name objects he always felt for them. There were many aphasic symptoms. He had difficulty in understanding questions and many of his replies were unintelligible. From the time he came into the hospital he was noisy and restless. He was fed mechanically. He developed a slight febrile temperature with a slow pulse. He became soporous; his head was much retracted and 8 days after admission died in coma.

VII

(Alzheimer's second case.)

Johann F., 56 years old, a day laborer, was admitted to the psychiatric clinic (Munich), Nov. 12, 1907.

Patient was a moderate drinker. Two years previously his wife had died, since which time he had been quiet and dull. For the last half year he had been forgetful; lost his way easily; could either not perform simple tasks or executed them awkwardly; stood about in an aimless manner; took little interest in his food but ate ravenously whatever was placed before him; could not make even a simple purchase and no longer bathed. Sent by the overseers of the poor.

Nov. 14, 1907. Pupillary reactions normal. Patellar reflexes rather active; no paralyses. Speech was remarkably slow but without articulatory disturbance. He was dull, slightly euphoric and comprehended poorly. He frequently repeated the questions asked him instead of giving answers, often repeating them over and over again. He could reckon the simplest mathematical examples only after long mental effort.

When asked to point out different portions of the body there was frequent perseveration. Immediately after speaking of the knee-cap, a key was called a knee-cap, likewise a match-box which was also rubbed on the knee when asked what one did with such a thing. He did the same with a piece of soap. Other requests such as lock the door and wash the hands were correctly complied with, although slowly and in a clumsy manner.

Sept. 20 1907. To the question What color is blood? he answered "Red." Snow? "White." Milk? "Good." Soot? —

He counted correctly up to 10, could name the days of the week, give the names of the months and repeat half of the Lord's Prayer, but could go no further. $2 \times 2 = 4$, $2 \times 3 = 6$, $6 \times 6 = 6$. He could tell the time of day by the watch, and button his coat correctly. Given a cigar he placed it in his mouth, struck a match, lighted the cigar and smoked, all of which he did in a proper manner. Given coins to identify he examines them from all sides then says: "That is, that is, we have here, here, here—." He could not name a match-box. He knew the use of a mouth harmonica, a dinner bell and a purse, but he could not name these objects. From a number of objects placed before him he could pick out a match-box and a lamp, but failed when

requested to select a brush and a corkscrew. Requested to bend a knee he doubled a fist. There is no impairment of ability to repeat words after examiner.

How many legs has a calf? "4." A man? "2." Where does a fish live—in the woods on the trees? "In the woods on the trees."

Lumbar puncture: No cellular increase; no complement deviation in blood or in cerebro-spinal fluid.

Eyegrounds: Ill-defined boundaries of the right papilla; left eye normal findings."

Sept. 23, 1907. Gets up and urinates near the bed.

Oct. 8, 1907. When asked to write he did not take a pencil, but a match-box, with which he attempted to carry out the request. The focal symptoms show a great variation in their intensity.

Nov. 15, 1907. Elated; laughs much; eats a great deal; sits around stupidly, but actively moving his hands, pulling his blouse or nightcap apart; at times tearing everything in the way of bed linen or clothing and cramming the pieces into his mouth.

He is still able to repeat words after examiner. Objects are used incorrectly, e. g., brushes his coat with a comb. When given a key and told to unlock the door he goes to the door but apparently doesn't know what to do. In writing his name he repeats letters. He could not be gotten to write anything other than his name.

When objects are pointed out to him to name he makes no answer or repeats senselessly the request, doing so at times over and over again. He makes no spontaneous utterances. If one irritates him by taking away the towel which he is chewing he sometimes becomes violent.

When he was asked to make certain movements with the hands he repeated the words of the request. When the movements were made before him he looked on as though not comprehending. Asked to place the thumb with outstretched fingers to the tip of the nose—"thumb the nose" (*Langenase*)—he thumbs the chin instead; to throw a kiss he holds the hand in a rather constrained manner as though making a military salute, nevertheless brings the hand to the mouth.

Dec. 8, 1907. Manifest deterioration. He gets out of bed frequently; busied with his bed things.

Wassermann reaction negative in blood and cerebro-spinal fluid. One cell in a c.mm. of cerebro-spinal fluid.

March 2, 1908. Told to wash his hands he does so correctly, but continues washing them indefinitely and when told to turn off the faucet holds his hands beneath it. Asked to seal a letter he attempts to light the candle with the stamping die, later warms the wax and presses it on the die. Given a cigar to light he rubs it on a match-box.

March 4, 1908. He is restless and imparts the impression

that he is delirious. Constantly packs his bed clothing in a bundle and will leave, doing this the entire day with perspiration streaming down his face. He is now constantly resistive, complying with no requests. When given a hair brush he licks it. Almost no spontaneous speech.

May 5, 1908. Other patients have taught him to sing "*Wir sitzen so frölich beisammen.*" but he has to be frequently prompted with the words, although the melody is carried fairly well.

May 12, 1908. A physical examination shows no pathological alterations in the pupils or tendon reflexes. The papillæ of the eyegrounds are noted as normal. (Right papilla somewhat abnormally formed.) When questioned he usually answers "yes" and then laughs in a demented manner. He can still repeat after examiner, at times exhibiting a perseveration in so doing. Certain movements such as spreading or twisting the fingers he imitates correctly, though awkwardly.

June 12, 1908. He goes for a walk in the garden. So long as anyone accompanies him he does not stop, going at a rapid gait with the perspiration streaming from him, constantly waving the tail of his coat which he grasps firmly. When in bed he is constantly waving the bed clothing about, grasping them firmly in the meanwhile. When he was pricked with a pin or the soles of his feet tickled for a long time he did not react, but finally struck at the physician. He scarcely speaks a word now.

It is remarkable, nevertheless, that in spite of his pronounced dementia there is no disturbance of ability to execute gross movements, nor is there noticeable ataxia or weakness in the extremities.

Dec. 14, 1908. Passes feces and urine regardless of where he may be; no longer talks; always busied with his bedding or blouse. When another person begins he still sings "*Wir sitzen so fröhlich beisammen.*"

Feb. 3, 1909. An epileptiform attack of a few minutes' duration; twitchings in face.

Feb. 6, 1909. Right facial weakening.

Feb. 9, 1909. Disappearance of facialis phenomena. Reexamination of the blood and cerebro-spinal fluid gave the same negative result as formerly. He is very resistive to whatever is done for him; constantly busied with bed-cover or with his blouse; no longer speaks or complies with requests.

May 31, 1910. He has lost slowly but steadily in weight. Always busy in the same manner with the bed-clothing.

July 29, 1910. Epileptiform convulsions of 2 minutes' duration.

Sept. 1, 1910. Rise of temperature to 38.5 C.; crepitant rales over the lungs.

Oct. 3, 1910. Death from symptoms of pneumonia.

VIII

(Bielschowsky's case.)

Mrs. B. became ill at the age of 58. From information furnished by relatives, a gradual change was noted, following the death of an only son. She was very forgetful, lost her grip on the management of her household and finally was unable to perform the simplest housework. There had never been periods of excitement. To be sure the information furnished by friends was not as full as might be and was rather untrustworthy. There was no apoplexy throughout the entire course.

Admission to Gitschner Street Hospital (Berlin) was not until 2 years after the onset of the malady. Physically the patient offered no symptoms worthy of note. The pupils were of average diameter and reacted promptly to light and convergence. The eye grounds were normal. Motility and sensibility of the extremities were shown by repeated examinations to be undisturbed. The gait was cumbersome and slow but revealed no paralytic disturbances. Patellar and tendo Achillis reflexes were active; no Babinski; negative Wassermann reaction.

The mental condition was that of an advanced dementia. Especially striking were the extreme memory impairment and disturbance of retention. She did not remember the most important events in her life. Her vocabulary was very limited. On many days she replied to questions only with "yes" and "no," but she could correctly repeat words after examiner. In these tests there was frequently a perseveration of the last spoken word. Objects placed before her she does not name spontaneously. Still when pictures are shown the wrong name given to a picture is immediately detected.

When requested to imitate with the arm or leg certain simple movements she generally succeeds nevertheless in an awkward manner. With complicated tests she fails completely. Instead of winking the eyes or making threatening movements as requested, she scratches the bedcover. Requested to strike a match, the movements are inappropriate. How well she understood the requests could not be determined with certainty but from the anxious facial expression and embarrassed behavior it was evident that the patient was conscious of her defect.

During her stay in hospital no noteworthy change developed. After about 4 weeks she became very apathetic and then passed into a comatose state during which she died.

IX

(Lafora's case.)

William C. F., a veteran of the civil war, was admitted to Govt. Hospital for Insane, Washington, D. C., when 58.

After the war the patient was very much exhausted. Later, and for many years he had been employed as a bill-poster. He was a heavy drinker.

His present illness began in Nov., 1906, at the age of 56. He evidenced persecutory delusions, was excited, incoherent and demanded protection. Some weeks before this he had made marriage advances to several nurses. Soon after the onset of his illness he became untidy with bowel and bladder movements and would smear his face and body with feces. Once during an excited period he threw an iron bar at an attendant. He was always markedly disoriented, could not give the name of his physician or nurses, nor tell where he was. Often he could not find the way to his room.

Sept., 1907. He attempted to run away. At this time he was more careful in dress and generally more cleanly.

During the further course of his illness there were transitory periods of excitement and confusion. Several times he attempted to escape from the hospital. Disturbance of retention appeared early.

Jan., 1908. He could no longer find his way to bed or his place in the dining room.

Sept. 23, 1908. Attacks of dizziness from which he recovered on the following day.

Oct., 1908. He kept to his bed and frequently refused food. Echolalia and long-continued perseveration were often observed. Sleep was always good. He took no interest in his surroundings; often talked and laughed to himself. Dementia disorientation, indiscriminate bladder and bowel movements and untidiness were progressively worse.

Jan., 1910. A urinalysis revealed albumin and granular casts.

March, 1910. He often ate his excrement. Sometimes he was depressed, sometimes excited. To this period belongs the following dialogue between the patient and nurse:

What day is it? "I don't know, ma'am."

What date is it? "I don't know that, miss, man, Mr."

What month and year? "Right under this corner Mr., man."

How have you been in this hospital? "Right there, miss, is all that I know, I tell you."

What kind of a place is this? "I don't know, I know nothing, absolutely nothing, nothing, nothing, nothing."

Where is it? "Hell, hell, hell, hell, hell, hell, hell, hell, hell."

Where did you come from? "I have already told you. I was in Lancaster; I don't know anything."

Patient then said he heard a beautiful lady speaking to him.

What did she say to you? "I don't know whether I told you or should; it is fine, fine, beautiful, beautiful."

Later he again frequently ate his excrement; was untidy; disturbed his clothing; moved about in an aimless manner or remained the entire day in bed.

Jan., 1911. He had to be fed. Occasionally he disturbed the linoleum on the floor and would chew it vigorously.

Feb., 1911. Very feeble; dementia progressing rapidly.

March, 1911. He received a violent blow from another patient, nevertheless after a few days his appetite was again good and he seemed to feel well.

March 13, 1911. Anuria, which continued with slowing respirations, cyanosis, inability to swallow, and unconsciousness until death March 14.

X

(Westborough Hospital case, *vide supra*.)

XI

(Betts' case.[1])

C. F., female, milliner, 55 years, United States, single, somewhat intemperate. Admitted May 23, 1901. (Buffalo State Hospital, N. Y.) Onset somewhat indefinite at about 40 years with marked memory defect and disorientation, with mild simple depression. During her first four years' residence she merely showed extremely defective memory for both recent and remote past, then gradually became untidy and restless, resembling a case of general paresis. A note made January, 1905, states: "Memory defect very marked; speech rambling and ataxic. Test phrases very poorly handled; writing tremulous and almost illegible. Station steady; knee jerks normal. Marked tremor of hands, tongue and facial muscles. Pupils slightly unequal but react well to light and in accommodation. A few months later she became very filthy and destructive in habits. Was quite disoriented, very restless and resistive. She showed progressive physical failure and in October 1908, a diagnosis of pulmonary tuberculosis was established. During the last few months of her illness she showed great tremor and resistiveness. Died October 31, 1908.

XII

(Schnitzler's case.)

Mrs. Van D., aged 34, was first admitted to the Polyclinic (Utrecht) Dec. 10, 1908.

From her physician and husband the following anamnesis was obtained: Formerly the patient was always well. She had been married 9 years. Early after marriage, the husband states, she gave evidence of not being up to the average mentally, "somewhat stupid," otherwise she was an orderly housewife, the household carefully looked after, and she displayed an interest in the little gift shop which her husband conducted. She did not use alcohol. Of 4 children borne 2 are living and well, the

[1] In reply to a letter of inquiry concerning this case, Dr. Betts writes: "In regard to aphasic symptoms there is no note made in clinical history except that the writing was practically illegible. Anatomically the cortex showed a very considerable number of plaques and Alzheimer degeneration was very marked and extensive."

other 2 died at the ages of 3 months and 3 days respectively. There had been no miscarriages. The last child was premature (7 months). Menses regular.

After the last parturition her husband reported that she was quieter than usual, often sat unemployed, slept a great deal and on the slightest pretext would revert to the loss of her child. In short, her condition was one of tearfulness and somnolency. The onset of the disease dated back 2–3 years. The indolence noted grew worse gradually, besides, she took on flesh rapidly—"grew thick in face and body." As the disease progressed she showed less and less interest in her surroundings, was untidy, could sleep through the entire day, spoke but little, acted in a childish manner—laughing at everything—and neglected the children—allowed them their way in everything. Her appetite was always good. In the management of her household she gradually became incompetent; at first she could do simple cooking but finally even this was impossible; she would either leave the stove door open, or allow the food to burn, or forget to add water, etc.

Finally she became "like a little child," often when she had made a mistake she realized what she had done. There were never any excited episodes or anxious states.

Status præsens.—On admission to the clinic the patient was remarkably stout. The face appeared bloated, the skin of face on palpation felt somewhat myxedematous, on the forehead fine closely applied wrinkles. The trunk was plump, disfigured by heavy folds of the skin, the arms and legs formless masses. The skin was everywhere thickened and pitted on pressure. The hands were the least swollen, the distal phalanges somewhat pointed. The color of the skin was not pale but a diffuse rose color. The growth of hair was not heavy; the nails showed nothing abnormal; many carious teeth. Body weight 100 kg.

The patient spoke slowly, now and then somewhat faster. One got the impression that she required for her answers a rather long reaction time, although when once started she was more fluent. Movements were correctly executed but a long time was required before she attempted them.

A small, somewhat hardened thyroid gland—surgically operable—was palpable. The heart was somewhat enlarged; urine negative for albumin and sugar. Temperature normal; pulse 90–100.

The patient appeared to the other patients as abnormal, she was continually somnolent. The right hallux was permanently in Friedreich's position. No further physical symptoms noted. Eyegrounds normal. The patient laughed in a childish manner at everything that happened about her. She wanted to go home, and several times ran out of the ward; wanted to visit her relatives but was easily pacified when told that she couldn't, nevertheless she went all the while to the door. Otherwise she gave no trouble to the nurses.

Dec. 17, 1908. Test for calculation ability.

$5 \times 6 = 30$ in 2 seconds.

$15 \times 3 = 49, 45$, in 7 seconds.

$12 \times 7 = 48$ in 6 seconds.

$14 \times 3 = 42$ in $21\frac{1}{5}$ seconds.

$17 \times 4 = 68$ in $24\frac{4}{5}$ seconds (reckons $4 \times 10 = 40$, $4 \times 7 = 28$, 68).

$12 \times 8 = 96$ in $4\frac{3}{5}$ seconds.

$18 \times 3 = 54$ in $9\frac{3}{5}$ seconds.

$16 \times 7 =$ (reckons $7 \times 10 = 70$, $7 \times 6 = 42$ does not add together).

$21 \times 11 =$ after 12 minutes, "I can't reckon so fast."

Counts from 1–50 correctly in 27 seconds. From 50–1, leaving out 22, in 62 seconds.

Repeats the names of the months faultlessly in $5\frac{3}{5}$ seconds, counts 1–20 in $5\frac{1}{5}$ seconds, from 20–1 correctly in 10 seconds.

Examination with Heilbronner's pictures.

Lamp.

1. Don't know.
2. Don't know.
3. Lamp, it is always the same.
4. Also a lamp.

Church.

1. Church with steeple.
2. (What goes with it?) Points out approximately correctly.
3. (What goes with it?) Points out +.
4. (What goes with it?) Points out +.
5. (What goes with it?) Points out +. Says, The little house, the things (are the windows).
6. (What goes with it?) Points out +.
7. (What goes with it?) Points out +.
8. (What goes with it?) It's the same.

Fir tree.

1. Fir tree.
2. (What goes with it?) Don't know.
3. (What goes with it?) Points out +.

Cannon.

1. Don't know.
2. The same thing with a star in it.
3. The same don't know what it is, but differentiates it from something else.

Wheelbarrow.

1. Don't know.
2. Don't know; differentiates +.
3. Wheelbarrow.
4. Differentiates +.
5. Differentiates +.

Boat.

1. Don't know.
2. Don't know; differentiates +.
3. Don't know; differentiates +.
4. Don't know; differentiates +.
5. Boat.

The patient answers quickly, the examination interests her (observations noted by others, not defective, just as patients in every detailed aphasic examination are designated as childish), she always wants to look at the next following picture and turn the leaves of the book herself.

She was shown weather forecasts cut from a newspaper (*The Telegraph*) such as, man with an umbrella or a lady with a sunshade, and the like, printed above *The Telegraph's* forecasts for the day. The patient looks at the picture, "A man with an umbrella," she says. At first she reads the printed matter in a verbal, paraphasic manner, then correctly. The pictures are all alike, "From a leaf calendar," she adds spontaneously, "are they not?"

(Do you know *The Telegraph?*) "Yes, there is a newspaper called *The Telegraph* and there is a telegraph where one may send messages."

"Yes, the pictures are from the newspaper."

(What is that there?) Reads the print in a low tone; "That is on all of them."

(What indicates rain?) "The man with the umbrella."

She then reads a notice from the paper without a mistake.

The general impression is won that along with the retardation there is a defect; the dementia, however, is manifestly not great, not sufficient to offer an explanation for the totality of her symptoms.

With the Bourdon test—underlining certain letters in a reading test—the results in general are poor; certain portions, however, are faultless.

Dec. 18, 1908, the patient was exhibited before the medical society by an assistant of the surgical clinic, where she ran out of the waiting room, necessitating the sister's running to the end of the corridor after her. She wanted to visit her relatives. She sat on a chair, frequently asleep during the demonstration, her movements very slow.

Dec. 19, 1910. She knew that she had been in a large hospital the day before, which reminded her of a theater, though it was not; that many gentlemen were seated there and that she was somewhat anxious. She remembered sitting on a chair and that the assistant was there; that one of the gentlemen had spoken—the professor (incorrect); that he had said that she had grown stout in the last 10 years and that she was 45 (correct) and that she had corrected him as to her age. She was very positive that it was the professor who had spoken.

Who showed you the pictures? "I don't know."

What was shown you? "I don't know."
Did you look in a book? "No."
A small black book? "No."
With pictures? "Oh, yes."
What were the pictures in it? "I don't know now."
Animals or the like? "A wheelbarrow."
And houses? "Yes."
What kind of houses? "A house with a tower."

Dec. 28, 1908. Since admission the patient has lost 2.2 kg. For the last 10 days she had been taking desiccated thyroid gland, one dose a day.

She did not remember that during the first days of her hospital residence she continually wanted to leave. Her face was less bloated and she slept less, although by 7 p.m. she was ready for bed. Simple examples she reckoned readily. She thought the other patients made fun of her size.

After three thyroid tablets daily had been administered, her weight reduced by 5 kg. and perhaps less retarded, she was discharged Jan. 6, 1909, cautioned to continue the thyroid treatment and to return for observation.

In spite of our advised treatment the mental condition gradually grew worse and at the suggestion of her physician she was again admitted to the clinic, April 13, 1910.

On this admission: No hemianopsia, bitemporal or otherwise; lateral movements of eyes coördinated; no nystagmus. The eyelids could not be widely separated, they were swollen. There were transitory indications of right facial paresis without involvement of the frontal muscle. The pupils were equal and circular, reacted to light and convergence. Ophthalmoscopic examination revealed no abnormalities; plantar reflexes normal.

In walking her movements were rather clumsy, still without characteristic gait disturbances; the right hallux always in Babinski position. Speech was slow and there was difficulty in pronunciation. She answered correctly simple questions, such as "When did you come here?" "Do you know me?" etc., and she counted the number of keys on a ring. She had no pain. She ran to the door, wanting to leave. The skin was dry and extremely thick; on the back, blue marks. Lying in bed drinking a glass of water, the water would run down her chin on her clothes. Swallowing was difficult.

She repeated correctly 555,666 and *Spoorwegmaatschappy*, but with a slight tremor of the voice. She counted correctly from 1–20 in 18 seconds, from 20–1 in 60 seconds but it was necessary to stimulate her frequently. With this there was a slight tremor of the legs. The examination established no evidence of aphasia, the special examination for signs of apraxia (raise the hands aloft, point above with the index finger, grind coffee, wink the eyes, make threatening movements) also gave

negative results. The threatening movements she accompanied with a dreadful roar.

April 25, 1910. Elevation of temperature with symptoms of pneumonia; marked somnolency. She lay abed with mouth opened and double ptosis. When the lips were touched, reflex closing of the mouth. Swallowing was difficult. After many repetitions she undoubtedly understood what was said to her. Reactive movements were carried out slowly and incompletely. Of neurological symptoms there was a distinct paresis of the fingers of the left hand. The finger movements of the right hand and the toes of each foot were unaffected. Besides, there was indication of hand clonus on the left side. There was no hypotonicity of the extremities.

For a few days following, the clinical symptoms on the whole showed no change. The attempts to speak gave one the impression of a patient suffering severe bulbar disturbance, only a vocal tone produced.

April 20, 1910. She recognized objects with left hand without much manipulation. The finger movements of the right hand and the movements of the toes undisturbed. The ptosis of the left eye was less pronounced. The temperature inclined to normal.

April 22, 1910. She is incontinent, complains of pain in the side (probably from lying, decubitus); deglutition bad, best with semisolids.

April 23, 1910. Temperature again elevated. General condition as noted above. No change in neurological symptoms. Death.

XIII

(Janssens' case.)

A woman of 55 was admitted to hospital (Endegeest, near Leyden) March 2, 1907.

According to information furnished by the family and her physician, she gradually became so demented, following a delirium of several days' duration 2 years ago, that not only was she unable to manage her household affairs, but she herself had to be constantly watched over and cared for. During the last few months she had talked but little. One morning six months before admission, she was unable to get out of bed; the right leg and right arm were paralyzed. The paralysis, however, soon disappeared, but since then the mental symptoms had grown much worse; the dementia had become more pronounced and she spoke almost never. Of late she had repeatedly assaulted her daughter, and above all she had been very restless. The husband further reported that formerly his wife was cheerful and robust, but always a bit obtuse; that she could neither read nor write. Hereditary factors were wanting.

Upon her reception at Endegeest she was put to bed, but im-

mediately left it. She was very restless, went about aimlessly, sat on the beds of other patients and busied herself with the bed clothing after the manner of a senile dement. She expectorated all about her and defecated on the floor.

The most striking symptom, however, was a characteristic speech disturbance which showed itself in spontaneous as well as in reactive speech. For hours at a time she would utter in a monotonous tone "puk, puk, puk." This perseveration appeared more clearly in the form of a definite word-spasm (*Logoklonie*) in her answers to questions. Requested to name a key which was held before her she said: "that is then, then, then, then" and to the question How old are you? "Das weiss ich ni, ni, ni, ni, ni." To many questions there were no answers or any other kind of reaction, reactions came only after a long while and after many repetitions of the questions. During the first few days, a short properly constructed sentence was occasionally heard in spontaneous as well as in reactive speech, but even these soon ceased, only such expessions as noted above remained.

During the early part of her hospital residence she executed command movements sometimes well, sometimes poorly, and in general the simpler movements much better than the more complex, but it was not long before such reactions also failed. Still she was so very restless, continually leaving her bed, that it was necessary to care for her in the continuous bath. She often sat half-upright calling out rather quickly, for hours at a time, "ti, ti, ti, ti," meanwhile clapping her hands. If she were asked questions she took not the slightest notice. She displayed just as little interest in her relatives whom she apparently did not recognize. On the other hand she now and then addressed the nurse as "Grete," the name of her daughter.

From the very beginning and throughout her stay at Endegeest she had to be fed by the nurse, and she was always untidy. During the 3 years in hospital there were several epileptiform attacks (four in all) which differed from ordinary epileptic seizures by long after-periods of unconsciousness, periods lasting an hour.

Now if I mention that the pupils reacted; that definite focal symptoms—aside from apractic, aphasic and asymbolic indications—were absent; that the reflexes were normal; that the heart was not enlarged; that the urine was free from albumin; and that there were no evidences of peripheral arteriosclerosis; then I have outlined the chief features of the disease-picture which this woman presented. I must add only that, following an epileptiform attack, a transitory right facial paresis was observed.

In the early part of 1910 slight contractures of the lower extremities developed. Once, after a long period in the continuous bath, slight muscular twitchings were observed which while more pronounced on the right side of the body were also noted on the left side.

March, 1910, the following note was made: "The attention of the patient is difficult to gain; even when food is offered she makes no effort to take it, nor opens the mouth when the spoon is brought near. Of her own accord she frequently appears to follow objects with her eyes, but it is almost impossible for anyone to arouse her attention. If she is asked, while eating, "Do you wish more?" or "Does it taste good?" an occasional "yes" is heard. This "yes" is the only intelligible word uttered during a period of 3 hours, and should it be interpreted as an actual reaction, then, it is the only mental contact made. It is also striking how less frequently the remarkable expressions (ti, ti, ti, ti, or puk, puk, puk) are heard which earlier were so loudly and repeatedly emitted. The last few months she has emaciated markedly."

In May, 1910, she died suddenly, and unexpectedly, while the nurse was fixing the food preparatory to feeding her.

As supplementary the following is added: Lumbar puncture was negative, likewise a Wassermann reaction of the blood. Examination of the eye grounds revealed nothing abnormal.

The autopsy on this case revealed a markedly atrophic cerebrum, the atrophy diffuse in character. Focal lesions were found nowhere. The sulci gaped and the convolutions were small. Here and there a slight clouding of the meninges was observed. The larger vessels exhibited no signs of arteriosclerosis. The brain weighed 900 grams. The cord was not preserved.

Microscopically, plaques were present in great number and widely distributed in the cerebral cortex, in greatest number in the temporal gyri, while stratigraphically most numerous in the 2d and 3d laminæ. Plaques were not demonstrated in cerebellum and basal ganglia. Numerous corpora amylacea were distributed throughout the cerebral cortex. Alzheimer degeneration of ganglion cells was present. In the cortical vascular apparatus occasional arteriosclerotic changes were observed, including calcareous alterations of the vessel wall. An occasional lymph and plasma cell infiltration was noted.

Janssens believes his case is an example of Alzheimer's disease, a form of senile psychosis which must be reckoned as an atypical senile dementia.

Summary.

Briefly, the clinical histories of these cases may be summarized thus: About middle life or slightly past, with one exception in early adult life beginning at the age of 32, memory defect, disturbance of retention and general mental weakening set in and progress to a marked dementia. The progress of the dementia in some of the cases has been slow, in others fairly rapid. As a

rule, early in the course of the affection aphasic disturbances—verbal amnesia, occasional paraphasia and jargon, impairment of ability to comprehend spoken language, graphic disturbances, verbal and literal perseveration—ideational apraxias and agnosias develop, varying from time to time in severity but never as intense or consistent as the speech disturbances and apraxias originating from coarse focal lesions of the brain. Mental confusion, with some delirium, lack of bladder and rectal control without evidence of limb paralyses, good preservation of gross muscular strength, considerable motor activity and restlessness have been striking features of the majority of the cases. Auditory and visual hallucinations with apprehensive delusions based upon them and spatial as well as temporal disorientation have been prominent in some instances. Disturbances of the motor projection paths were slight or absent; if occurring at all usually appeared late, even then were often transitory. In a few of the cases motor disturbances have been noted as residua of epileptiform convulsions. Convulsions with loss of consciousness, however, have not been observed, save in the terminal stage, epileptiform attacks and muscular twitchings being recorded. With exception of case II, luetic infection does not appear in the anamneses. Alcoholic indulgence while noted as moderate in VII and X, pronounced in II, IX and XI, absent in XII and not stated for the remaining cases, seems to have played no rôle or at most a minor one. An apathetic dementia was recorded for two of the cases (VIII and XII) and skin alterations suggestive of myxedema in two cases (V and XII).

Gross Brain Anatomy.—Atrophy was noted macroscopically as follows: general in I, XII and XIII, general with regional emphasis in III (frontal and temporal), V (occipital lobes), IX (right Ammon's horn), XI (frontal and parietal), regional in VII (frontal, parietal, temporal), VIII (frontal), X (frontal, left temporal) and not mentioned for the remaining cases. A quite appreciable cerebral arteriosclerosis, particularly of the larger vessels of the base and their chief branches was found in

[8] In Alzheimer's abstract of Case I, as originally published, the larger cerebral arteries are reported as sclerotic. ("Die grösseren Hirngefässe sind arteriosklerotisch verändert." L. c., p. 147, 1906.) In Perusini's report of the same case the larger vessels are stated to be without arteriosclerotic changes. ("Die grossen Hirngefässe, der Circulus arteriosus Willisi, die A. A. Sylvii usw. bieten keine Zeichen einer deutlichen Arteriosklerose dar keine erheblichen regressiven Veränderungen der Gefässwand." L. c., p. 301, 1909.)

I[3] and X. Slight arteriosclerotic change of these vessels in VII, moderate in XI and it was especially noted that such change was wanting in II, III, IV, V, VI, VIII, IX and XIII. No note was made in XII. Gross focal lesions were not present in any of the cases save II, in which an old cyst of the corpus callosum, a myelitic softening with atrophy of left pyramidal and posterior columns in cervical cord and a meningo-myelitic focus of the lumbar region were encountered. There was hyperplasia of the pia in I, II, III, IV, V, VII, IX, X and XII, a slight thickening in frontal regions of VIII and not mentioned for VI and XI.

Microscopical Findings.—The microscopical examination of the brains revealed a large number of miliary plaques in all of the cases save XII. The plaques were most numerous and frequently of greater size than those usually found in other brains exhibiting these structures. In case VII they were of enormous proportions, a single plaque extending in many instances through one or more cortical laminæ. In XII no plaques were found. The peculiar basket-like alterations due to the presence of thick, darkly staining intracellular fibrils arranged in whorls or in a tangled mass, have been found in all of the cases with exception of VII. Formerly these neurofibril alterations in combination with plaques were considered of great diagnostic significance for the mental disorder under consideration, but the combination has been reported by several observers (Fischer (12), Barrett (5), Simchowicz (13), Fuller (9)), as present in brains of some typical senile dements. The writer has also seen basket-cells in combination with plaques in the case of a man of 80 dying without psychosis. Bielschowsky has suggested that the coarse fibrils one sees in cells so affected are perhaps the result, in part, of incrustations of neurofibrils with deposited products of pathological metabolism. He also points out that the course of these fibrils is not always that of the usual course of the normal neurofibrils and is inclined to consider them as entirely foreign elements. Alzheimer conceives a degeneration and chemical alteration of the intracellular neurofibrils which permit them to be stained by other methods which do not usually display these elements. Fischer (12), who reports 19 cases showing such cells, interprets these peculiar cell changes as coarse-fibered proliferations of neurofibrils. He does not consider his cases as examples of Alzheimer's disease but places them in a group which he desig-

nates as presbyophrenic dementia. In addition to the changes already noted, complete destruction and disappearance of ganglion cells have been reported, Nissl's chronic nerve cell changes and a rich lipoid content of ganglion and glia cells. Progressive and regressive alterations of the glia are rather generally reported and likewise progressive-regressive phenomena of the cortical vessels; in IX, marked calcification of smaller vessels in Ammon's horn and occasional calcareous changes in the cortex of XIII. Infiltrative phenomena have failed in all cases except II in which there was a moderate infiltration of lymphocytes in cortical vessels and pia, and endothelial proliferation suggestive of luetic endarteritis and occasional lymphocytes and plasma cell infiltration in XIII.

From all that has preceded it is reasonable to assume that the type of cases which have been discussed, while not in every instance free from sclerotic vascular alterations of the brain, is not a type of mental disease resulting from arteriosclerosis. In a certain sense a precocious senium is conceivable and by this something quite different from an early arteriosclerosis is meant. In an earlier paper I have argued that arteriosclerosis *per se* had little or no causative relationship to the formation of miliary plaques of the brain so characteristic in the microscopical findings of the type of case here considered and in many cases of typical senile dementia, although many brains of the latter class showing plaques also exhibit considerable arteriosclerosis. On the other hand, plaques may be wanting in brains exhibiting the maximum of arteriosclerosis, particularly in cases recognized clinically as arteriosclerotic insanity and post-apoplectic dementia. In all cases of Alzheimer's disease reported, with one exception (XII) plaques have been found in great number, but only two of the cases have shown macroscopically any appreciable arteriosclerosis.

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Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY

April 2, 1912

The President, Dr. L. Pierce Clark in the Chair

A CASE OF ACUTE EPIDEMIC POLIOMYELITIS

By Foster Kennedy, M.D.

The speaker presented a boy, from Dr. Dana's service, Cornell Clinic, twelve years old, who on August 18, 1911, was on a boat, en route to Albany. His previous history was negative, and he had been in his usual good health with the exception that for two days preceding his present illness he had complained of a slight headache. At 8 P. M., after having supper on the boat, he was coming downstairs, when he suddenly dropped to the floor and was completely paralyzed from the neck down. He did not lose consciousness, but complained of a general feeling of soreness. He was unable to move his head, and the loss of power was apparently absolute. On the following day it was noted that he had incontinence of urine and feces. On the fourth day he developed a broncho-pneumonia, and his temperature rose to 103° F. About a month after the onset of his attack, the incontinence of urine and feces disappeared, and he gradually began to regain power in the paralyzed muscles, first in the neck, then in the fingers, hands and arms, then in the right leg and last, in the left leg. About the seventh week he was able to creep, and during the tenth week he could walk by placing his hands on his knees.

On September 21, 1911, when he was first seen at the Vanderbilt Clinic, no sensory changes were made out. There was considerable weakness and some atrophy, particularly of the spinal and abdominal muscles. Since that time there had been a slow but steady improvement in the boy's condition, and he was now able to walk, and raise himself from the recumbent posture.

An interesting feature in connection with this case, Dr. Foster said, was that before his illness the boy's body was quite hairless, and two weeks after the onset of his attack it was covered with a downy growth of hair, not unlike the down on a young chicken. During his illness, the hair on his head, and his toe and finger-nails did not grow at all, although there was no loss of hair, and it was not until December, when the downy growth on the body was disappearing, that the nails and hair on the head began to grow. The right knee-jerk was greater than the left. Both ankle-jerks were increased. The abdominal and epigastric reflexes were absent. The plantar reflexes in December, 1911, were both of the extensor type, but at the date of presentation of case were of indefinite character.

Dr. I. Abrahamson recalled the case of a girl of eighteen, who, after many days of prodromal symptoms, fell, owing to her unsteadiness of gait, and shortly afterwards she developed the clinical syndrome of an almost complete transverse myelitis. A diagnosis of acute poliomyelitis with secondary hemorrhage was made, and later confirmed at the Rockefeller Institute in experiments on monkeys. The case was in the service of Dr. B. Sachs, who expected to publish it in detail at some future time. The girl made an almost complete recovery.

Dr. William M. Leszynsky said the remarkable feature in Dr. Kennedy's case was the sudden onset of the paralysis, apparently without preliminary symptoms. During the New York, 1907, epidemic he had seen several cases in younger patients who were not very ill and who were found paralyzed in all four extremities within a day or two. He recalled one such case in a child of six years and another of ten where without marked premonitory symptoms, all the signs of paralysis without spasticity developed. Both made good recoveries. In one of these instances, a second child in the family became similarly affected, and had remained completely paralyzed.

Dr. Smith Ely Jelliffe said there seemed every warrant for supporting the diagnosis of Dr. Kennedy in the patient shown. Not only in the New York epidemic of 1907, but in the numerous recent epidemics that had occurred throughout the world, there was evidence that cases of this kind were by no means uncommon. Myelitic cases had been reported by Medin and others. If a unilateral Babinski was present in this case, which now had disappeared, it was a very rare phenomenon, but yet not unknown in poliomyelitis. As to the persistence of the Achilles and knee-jerks, they were not necessarily absent unless the affection involved the particular cord area concerned in the reflex path. In this instance, apparently, the muscular involvement was more or less mild, and one would not look, necessarily, for a loss of the reflexes mentioned. Furthermore, with reference to the pains which gave rise to a warrant for regarding the diagnosis of polyneuritis, it should be remembered that many cases of supposed polyneuritis were really cases of poliomyelitis. As Dr. Kennedy did not see the boy in the acute period, certain features regarding sensibility could not be reported upon; these were of value in determining a differential diagnosis, especially the tests for bony sensibility which were rarely modified in poliomyelitis, but often in polyneuritis.

The President, Dr. Clark, said he was surprised at the very slight involvement of the upper extremities if the condition was really a meningitic one. With involvement of the pyramidal tracts, one would naturally expect the upper extremities to show decided evidence of more permanent after-effects.

Dr. Clark said that during the recent epidemic of poliomyelitis, he saw several cases of the cervical type at the Babies' Hospital, and in those cases the upper extremities were certainly very much involved, both in the flaccid palsy and as to the final outcome. There was a considerable degree of wasting.

TUMOR OF THE RIGHT FRONTAL LOBE

By William B. Noyes, M.D.

The patient was an Italian, 26 years old, who was admitted to the Columbus Hospital on January 15, 1912. His family and personal history were negative.

In April, 1911, he had pain in the back of the head: dull in character, and inconstant. For several months there had been some unsteadiness in walking, and recently he had photophobia and had suffered from indistinct vision. When seen January 16, 1912, there was no paralysis of the face nor extremities; no genuine motor nor static ataxia. There was no analgesia nor anesthesia, but a marked hyperesthesia to pin prick. There was no localized tenderness over the head or other parts of the body. His knee-jerks were not especially exaggerated; no clonus; no Babinski; the cremasteric and abdominal reflexes were active. No evidence of paralysis of the cranial nerves; no deafness; nor dysarthria nor other speech defect. The pupils responded to light and accommodation; no strabismus. The vision of the right eye appeared to be defective. An ophthalmoscopic examination, made a few days later, showed optic neuritis of both eyes.

The diagnosis of a tumor of the brain was evident, but its location was uncertain. The unsteady gait became a little more marked from day to day, suggesting a cerebellar lesion. On January 29 he was drowsy, his pulse fell to 40; temperature, 97; respirations, 16. On the following day, at five o'clock in the morning, he was found dead in bed half an hour after having been waited on by a nurse.

A partial autopsy was obtained. The frontal bone was thinned, especially on the right side. The brain showed a tumor of the right frontal lobe, about the size of a hen's egg, and a recent haemorrhage, the blood being still quite fresh and fluid. No other tumor was found. Section of the frontal lobe showed that the hemorrhage extended to a depth of an inch and a half. The ventricle on the right side seemed dilated, and was filled with bloody serum. Microscopically, the tumor proved to be a glio-sarcoma.

Dr. Noyes said the location of this tumor would possibly have been determined upon and an operation for its removal attempted if the patient had lived a day or two longer, as he was more manageable in his drowsy condition of the last twenty-four hours than he was before. The location of the tumor, and the thinness of the frontal bone, as shown at autopsy, might have given dulness if carefully percussed, but this was at best a deceptive test over the frontal bone, with its normal variations in thickness. The location of the pain was too contradictory to be of much assistance, and the local symptoms were masked by the general increase of intracranial pressure.

Dr. Edward D. Fisher said that such a decompression operation often gave excellent results, irrespective of exact localization. As to the differential diagnosis between cerebellar and frontal tumors, the speaker said this was not always a simple matter, and it could not be decided by the seat of the pain. He recalled cases of frontal tumor where the pain was located in the cerebellar region, while with cerebellar lesions, the seat of the pain might be in the frontal region. He particularly had in mind one case where there was intense pain over the forehead, together with optic neuritis, blindness and staggering gait. The brain was exposed through the frontal bone, and although nothing was found, the patient was much relieved for several weeks. He finally died, and a cerebellar tumor was found.

Dr. Jelliffe said the history of the case reported by Dr. Noyes, owing to the unforeseen death of the patient, lacked certain data, both from a neurological and psychiatric standpoint, which might have led to a correct

diagnosis. We had no picture of the patient's mental condition to help us, and there was no information as reported as to whether there was involvement of the olfactory or other cranial nerves, nor any of the well-known cerebellar symptoms, asynergia, adiadokokinesis, cerebellar catalepsy, etc., which might assist in differentiating between a cerebellar or a frontal lesion.

Dr. Noyes, in closing, said it was not only the unexpected death of the patient that had prevented a more complete history of the case, but also the fact that he was a foreigner, and so obstinate and excitable that it was almost impossible to do anything with him. Aside from this, his mental condition appeared to be fairly normal.

A CASE OF PHYSIOLOGICAL EXTIRPATION OF THE GASSERIAN GANGLION FOR TIC DOULOUREUX

By Alfred S. Taylor, M.D.

A man, 62 years old, was markedly alcoholic up to twelve years ago, when he stopped absolutely. He was addicted to the excessive use of tobacco. His general health had always been good, with the exception of severe facial neuralgia, which dated back over 2 years.

When Dr. Taylor first saw the patient, in August, 1911, he stated that 27 months before he had had a severe attack of left facial neuralgia. Three months later an x-ray picture was taken, which showed the presence of an unerupted wisdom tooth in the left lower jaw. After this was extracted, he enjoyed almost complete relief from pain for nearly a year. Then the attacks of pain recurred, gradually becoming more frequent and severe, so that even the slightest touch or the act of masticating would excite a paroxysm. Even large doses of codeine and cocaine only partially dulled the pain. His general health became impaired, and he lost over 25 pounds in weight, in six weeks preceding operation.

Operation, August 24, 1911, by Dr. Taylor: Through the Hartley-Krause approach, made on the left side, the skull was opened and the dura pushed away from the bone. The Gasserian ganglion was then exposed, the second and third roots were identified and the sheath divided to expose the ganglion. Both the motor and sensory roots were severed proximal to the ganglion. The wound was then closed without drainage. The patient insisted upon going home on the sixth day after the operation. Since then he had been entirely free from pain and had regained his lost weight. His eyesight was constantly improving, and the over-activity of the tear-gland had ceased.

Dr. Taylor said the great advantage of the physiological extirpation of the ganglion in these cases was that the operation was comparatively simple, and that there was no interference with the ganglion itself, which was left to perform its natural functions. After extirpation of this ganglion, interference with the nutrition of the eye on the affected side was exceedingly common.

In this case, Dr. Taylor said, the patient had developed a certain amount of sensibility to touch on the side of the face which was operated on, but there was a marked difference between the sensibility of the two sides. In one other case where he did this operation the patient was positive that there had been no alteration in the sensibility on the affected

side, although Dr. Taylor said he was positive that the posterior root had been divided.

Dr. Jelliffe said he was under the impression that Van Gehuchten and Spiller used the term "physiological extirpation" to describe the tearing of the root from its central connections. The former made the point that it was only by tearing out the root that a physiological extirpation was accomplished.

Dr. Taylor said he did not think that distinction held good, because a physiological extirpation was one by which the ganglion was put out of commission without its removal from the body. We might divide the nerve, as he had done in this case, or tear it out; both would accomplish the same purpose, but one was distinctly surgical while the other was less precise. The tearing out of the nerve had been done by Spiller and Frazier in their experimental work.

Dr. Clark said we had recently heard so much about the treatment of trifacial neuralgia by injections of alcohol, that it was a distinct relief to have a case of this kind presented, and it was a fairly good example of what could be expected from this comparatively simple operation, even in a man 62 years old.

Dr. Leszynsky asked Dr. Taylor whether he plugged the foramen or occluded it in any way after division of the root, after the method practiced by Dr. Robert Abbe. Personally, the speaker said, he favored the alcoholic injection treatment before resorting to a radical operation on the skull. After a successful injection treatment the patient might have relief for several years. This occurred in several of his cases after a single injection.

Dr. Kennedy said he had had the opportunity of seeing a number of cases where the Gasserian ganglion was extirpated, and in only one of them had there been any subsequent interference with the nutrition of the eye. This freedom from ocular complications was attributed to the fact that the lids had been sewed together previous to the operation to prevent injury from the effects of the ether.

Dr. Kennedy said he had seen so many cases of trifacial neuralgia where an unsatisfactory result had followed the use of alcohol injections that he was glad to see the case shown by Dr. Taylor. It was preferable, he thought, for the surgeon to do an open operation in patients sufficiently strong to stand the major operation as then he could see what he was doing, rather than resort to injections which were given more or less blindly.

Dr. Rosenbluth said that although the results in the case presented were very beautiful and gratifying from a surgical standpoint, yet he thought it would be interesting to call attention to a method of treatment that had given very gratifying results in the cases coming under his attention the last year and a half. This was the treatment by diathermy or thermo-penetration, as derived from the regular high frequency currents. The results were uniformly good. One case in particular that had been made idiotic from dosing with morphine had shown remission from the very first application. The time, one and a half years in about six to ten cases, had been too short to give the final report on them.

Dr. Jelliffe asked Dr. Kennedy whether, as the result of his and Dr. Maloney's special study and observations of sensibility after facial and trigeminal nerve injuries, he would expect to find more pronounced protopathic disturbances after such a radical operation on the fifth nerve,

and also whether he could not give some suggestions relative to the course of the fibers of deep pressure sensibility of the facial region.

Dr. Kennedy replied that as the result of his investigation with Dr. Maloney of many purely fifth and seventh nerve injuries, he had been led to believe that the pressure-pain sense in the face was only partially supplied by that group, and partially by the sympathetic. He and Dr. Maloney had arrived at the conclusion that the sympathetic had a great deal more to do with the sensation of pressure-pain in the face than it had previously been given credit for. That conclusion had been reached by a process of elimination.

Dr. Taylor, in closing, said that in the case he had shown nothing was done but to expose the ganglion and divide the nerve roots. No plug nor other foreign material was interposed. In Dr. Abbe's cases the roots were divided anterior to the ganglion, and some foreign material was interposed to prevent regeneration, but in his own cases, Dr. Taylor said, the roots were divided posterior to the ganglion, and the fact was generally accepted that the posterior sensory root did not regenerate.

Dr. Taylor said he had never resorted to the use of alcohol injections for the relief of trifacial neuralgia, nor did he expect to do so, but he had seen a number of cases where that method of treatment was followed by very disastrous results.

Dr. Leszynsky said that personally he had never had any bad results follow the alcohol injections.

A CASE OF HEMI-HYPERTROPHY OF THE FACE

By I. Abrahamson, M.D.

A man, 26 years old, single, a machinist by occupation, and a native of Hungaria, came to the clinic complaining of occipital pains which began in the morning and lasted the entire day.

Examination showed a hemi-hypertrophy of the lower two-thirds of the left face, which the patient stated dated back as long as he could remember. The hypertrophy involved chiefly the bony structures, but also the ear, teeth and tongue. The bones that were involved were the superior and inferior maxillary, the malar and the temporal. The alveolar processes were enlarged. On the inner side of the left cheek there was a sessile tumor, and a similar one over the left parietal region. The x-ray showed that the left base of the skull was also involved, and there was decided condensation of the bone. The sella turcica was not enlarged. The fundi and the special and general sensations were normal. The fields were normal. The urine was negative, the sugar tolerance normal, as were the electrical reactions. There was an absence of vasomotor symptoms, *i. e.*, sweating, flushing, salivation and lachrymation. The patient's body was symmetrical, and there was no change in the reflexes. The subcutaneous tissue was not markedly involved over the affected side of the face. Psychically, the patient was normal.

Dr. Abrahamson said he regarded this as a case of hemi-hypertrophy of the face, probably of congenital origin. Since Beck described the first case, in 1836, a number of similar cases had been reported, both congenital and acquired. In some only the soft structures were involved, in others only the bones, while in some the entire half of the body was involved. The bones most often involved were the maxillæ.

Many theories for this condition had been advanced by various writers, the most likely being that it was associated with a disturbance of the hypothetical nutritional or trophic centers in the periependymal gray matter of the encephalon, and that a relationship existed between facial hemi-hypertrophy and acromegaly and syringomyelia.

A CASE FOR DIAGNOSIS

By William M. Leszynsky, M.D.

A young man, a clerk, 21 years old, six years ago had an attack of cerebrospinal meningitis from which he made a complete recovery in about two months. A year later he suffered from frequent and severe generalized headache, usually accompanied by vomiting and epistaxis. this continued at intervals for nearly a year. The boy's habits had always been exemplary; he had never used alcohol nor tobacco, and there was no history of traumatism, exposure to cold nor luetic infection.

The patient came under Dr. Leszynsky's observation in August, 1909, and briefly summarized, the case was as follows: A slowly progressive development of atrophy and paralysis beginning in the ulnar distribution of the left hand until claw-hand resulted; some atrophy in both shoulder girdles; a lesser involvement of the ulnar group of the right hand; vasomotor paresis in both hands; absence of local sensory symptoms; no pupillary disturbance. Several months after the onset of the symptoms, the lower extremities became implicated, the paralysis being limited to the peroneal group on both sides. There was an area of sensory disturbance over the trunk on the left side, affecting all forms of sensibility, and an area of incomplete thermo-anesthesia over the inner aspect of the left arm. At the end of a year there was a rapid exacerbation of the symptoms in the lower extremities, with complete bilateral drop-foot, hypotonia, ataxia, absence of all reflexes, and slow urination. This continued for a few months, when rapid improvement began and gradually terminated in complete recovery. The left side was principally affected, the sensory symptoms being confined to that side. The duration of the disease was one year and eight months.

In presenting this patient, Dr. Leszynsky raised the query whether this was an atypical case of polyneuritis of obscure origin, with symptoms of radicular involvement and functional disturbance of the cord, or could polyneuritis be excluded.

TRANSITORY PSYCHOSES

By M. S. Gregory, M.D.

The speaker said that in presenting a paper with this title, he did not wish to be understood as conveying the idea that there were disease entities which might properly be termed transitory psychoses. He used the term to signify those shorter or milder attacks of well-known and definite psychoses, those transitory mental disturbances symptomatic of many physical disorders, and those comparatively short emotional outbursts the exact mechanisms of which were but incompletely appreciated. The author said it was not his intention to evolve any new

hypotheses nor to review the literature of the subject, but rather to present some personal observations relative to certain transitory psychoses which had impressed him from the vast material which had come before him during the past ten years in the psychopathic, prison and alcoholic services of Bellevue Hospital.

The transitory psychoses, from the standpoint of duration, were those mental disturbances of a fleeting character, as well as those which might last for a somewhat longer period. For his present purposes, the author had arbitrarily limited them to those which ran their course within a week. He said he would omit from the discussion the frequent and well-known transitory mental states which appeared in infective-exhaustive conditions, in alcoholic, drug and other intoxications, and those symptomatic psychoses of cardiac, pulmonary or other organic disease.

From the fleeting nature and transitory character of the psychoses he had in mind, these disorders rarely attracted the attention of those with whom the patient came into immediate contact, and at times these attacks even failed to make any impression on the patient himself, unless the symptoms of mental disturbance became accentuated by some exogenous agency, or the patient committed some overt act which brought him into conflict with the law, necessitating his removal to the hospital. Outside factors, such as grief, business and domestic difficulties, financial losses, physical ill-health and narcotics, etc., frequently modified and accentuated the symptoms of transitory psychoses. Among these outside factors, the most common was alcohol. This aggravated and intensified the symptoms to such a degree that it, alone, might cause the patient to be brought to the hospital. These patients came as alcoholics, and constituted the greater portion of the so-called pathological drunkards, dipsomaniacs and periodic drinkers.

In carefully scrutinizing this particular class of patients as they appeared in the alcoholic wards, one became convinced that the alcoholism was purely incidental, and was the factor that aggravated the transient mental disturbance.

Of these transitory psychoses, the manic-depressive type was by far the most frequent. In the alcoholic wards, this mental disorder was seen in fleeting attacks, lasting from a few hours to a day or two, when it was regarded as pathological drunkenness. When the attack was of longer duration, lasting from several days to a few weeks, it was looked upon as dipsomania or as a phase of an alcoholic psychosis. These patients were admitted and discharged from the hospital many times without the true nature of the disease having been recognized, and they swelled the number of "rounders" and "repeaters" found in the alcoholic wards. The purely depressed phases of manic-depressive psychosis associated with alcoholism were equally as frequent as the excited ones, although it was more difficult to recognize them. As a rule, manic-depressive patients did not suffer from alcoholic delirium; they were not fearful nor apprehensive, but rather depressed and despondent. They reacted not at all or less actively to hallucinations. The manic-depressive was inactive and did not show the apprehensive restlessness of the alcoholic. There was no confusion nor disorientation. Suicidal thoughts and attempts at self-destruction were very common.

Transitory attacks of manic-depressive psychosis which were not associated with alcoholism were also very frequent, although it was difficult to demonstrate them.

Among the so-called pathological drunkards, in addition to the manic-depressive, one found another type of transitory psychosis which was the result of the association of alcohol and syphilis. Some luetic patients, after moderate drinking, manifested mental excitement which might last from two to five days. This was a type of furious and purposeless excitement resembling in many respects that of an epileptic. Cases of cerebro-spinal syphilis, with or without association with alcohol, might show transitory mental disturbances either in the nature of a profound confusion, or a condition of transitory sensory aphasia. Such patients might readily be mistaken for general paretics.

Dr. Gregory said it was hardly necessary to more than refer to the transitory psychoses of epilepsy. It was well known that a great many pathological drunkards as well as periodic drinkers were epileptics. These conditions were met with in the alcoholic wards, but far less frequently than the manic-depressive, contrary to the belief generally held. Without dwelling at length on these conditions, the speaker called particular attention to the automatic-fugue states of epilepsy, and especially to the fact that the acts performed during this period seemed to be the fulfilment of the patient's most urgent wish or desire. The majority of cases of so-called epileptic automatism and other fugue states showed this wish-fulfilment element.

Among alcoholics one occasionally noticed peculiar speech disorders akin to sensory aphasia. This condition might last from two to four days, and then disappear entirely. There were no focal symptoms, no hemiplegias, no pupillary anomalies; the reflexes might be exaggerated on both sides. This speech disturbance might be associated with considerable mental confusion—the patient not realizing his speech incapacity, or it might be more in the nature of a pure sensory aphasia.

Finally, Dr. Gregory briefly called attention to a series of transient mental disturbances in which the dominant factor was that of an emotional upheaval. Although these conditions had been recognized in the older books on psychiatry as instances of frenzy, furor, emotional insanity, etc., their existence had been looked upon with great skepticism by those of limited experience to observe such patients because of the opportunities offered to plead lack of responsibility in a medico-legal way. This skepticism was natural, and from a medico-legal side, these patients offered special perplexities. The attacks might last a few moments, or persist for several days. While under the stress of the emotional excitement, such individuals did not know the nature and the quality of their acts; they might realize afterwards that it was all wrong, but at the time, no such insight existed. They were totally incapacitated to control their own conduct. The measure of their responsibility lay within the statutory definition. From the viewpoint of public policy, with an incomplete, inexact and unscientific method of legal procedure, it might be unwise or improper to emphasize this viewpoint, but psychiatry must concern itself with facts as they existed.

In connection with his paper, Dr. Gregory reported in detail a number of cases illustrating these various forms of transitory psychoses.

Dr. Jelliffe said that after listening to Dr. Gregory's extremely suggestive paper, it seemed strange to him that thus far so little use had been made of the rich clinical material that was to be found in some of the institutions in this city. In no institution in the world, probably, was there as much concentrated clinical material as at Bellevue Hospital, and yet so little had come from it.

Dr. Jelliffe said he was particularly interested in the manic-depressive phases that Dr. Gregory had accentuated, because he believed that alcohol was often purely an incident in the disease. He regarded as extremely suggestive the author's interpretation; namely, that only a small amount of alcohol, added to the mild excitement of the manic attack, was sufficient to bring the patient into great difficulties. It was important to recognize the truth of this deduction. It should be constantly borne in mind by those who were in charge of the alcoholic wards in the various institutions in this city and elsewhere, and should serve to accentuate the cry that was being raised by scientific bodies and social workers throughout the country that in our attempts to analyze mental defects, those due primarily to alcohol should be viewed in the light of a disease and should be so treated, rather than in the light of a crime demanding penal and restrictive measures.

Dr. Leszynsky said that in connection with these cases of so-called transitory psychoses, it would be interesting to learn whether there were any indications upon which we could base a prognosis as to the duration of the attack—whether it would be transitory or prolonged. He could recall a number of instances where patients were committed, only to make a very prompt recovery, and where the attending physicians were afterwards criticized by the patient's relatives for being too hasty in advising the commitment. In one case of typical so-called melancholia, with delusions and great depression, in which the symptoms had persisted for a week, the patient recovered and, later, at once resumed her duties as a stenographer. In another case, that of a young woman with typical acute mania, the patient became so violent that she was committed to the Bloomingdale Hospital. After ten days all her symptoms disappeared and she was discharged shortly afterwards.

Dr. Clark said that in connection with the transitory psychoses of epilepsy, one very common phase was the disrobing act; this was present in at least 90 per cent. of the cases he had seen. The wish-fulfilment in these cases might not be so easy to explain.

Translations

DREAMS AND MYTHS. A STUDY IN RACE PSYCHOLOGY

By Dr. Karl Abraham

of Berlin

Translated by Dr. William A. White

superintendent of the government hospital for the insane, washington, d. c.

(*Continued from p. 482*)

The primitive means of producing fire consisted of a stick of hard wood and a piece of soft wood which contained a hollow. Through turning and boring movements of the stick in the hole the wood was set on fire. Fire created in this way shows the characteristic that after a time it goes out; it must then be called forth anew. Man made the same observation, however, about one other fire—namely, the heavenly. In the heavens the fire of the sun appears to him daily, warming and lighting; sometimes he saw further rays of fire descending from heaven, lighting and burning. The heavenly fire also goes out after a while. So probably there must be something in heaven that burns and goes out. According to a very ancient idea the Indo-germanic races beheld in the cloud formations a tree—the earthly ash which we meet again and again in the most varied myths. The wood of the ash serves man as a means of making fire. When they saw the fire of heaven there the wood of the heavenly ash was burning. The lightning darting from heaven to earth was fire coming down from the ash. From this arose the belief that the earthly fire was fire descended from heaven. The quick movement of the lightning through the air called to mind the flight of birds; from this arose the further assumption, a bird, which nested in the heavenly ash has brought the heavenly fire to earth.

In the myths of different peoples and at different times it is the eagle, the hawk, or the woodpecker, that have been assigned this rôle. Certain kinds of trees, for example, the mountain ash which bears red fruit, thorns and feathery leaves serve as a transformation of the lightning bird. In these parts are recognized again the color, claws, and feathers of the birds.

To the heavenly and earthly fire there was added in the ideas of the Indo-germanic myths a third kind, the fire of life. We touch here on the same analogy that made possible the identification of the heavenly and the earthly fires. The life fire must also be awakened. So long as it dwells in the body the body is warm. And like every fire the life-fire also goes out. The most apt analogy lay, however, in the production and the preparation of the fire. As fire is produced by the boring of a stick in a disc of wood so is human life created in the mother's womb. Many are the evidences for this conception in myths and in language. I will only mention here that the two principal parts of the primitive apparatus for the production of fire often bear the names of the male and female genitals. To such an extent was this view of the people transferred to flesh and blood. Even more: We find the same identification in the Semitic languages. In Hebrew the expression for male and female signifies exactly the borer and the hollowed.

So now the origin of the life-fire, the creation of man, likewise is transferred above to the ash. From it comes mankind like the fire; from it also man, like the fire, is brought by a bird to the earth. The stork that brings the children.

A later epoch, which so to say, settles like a new stratum in the myths, concerns the man-like gods. It retains the old analogy of fire and life; only it gives it a new form: the god of fire is also the man-god. In the Vedas we meet a god Agni (agni = Latin ignis, fire), who incorporates fire, light, sun and lightning, at the same time, however, he is also the first man. In the myths of different peoples Agni is also at the same time the lightning-bird. Picus, the woodpecker, was in the oldest Latin myths the fire-bird, lightning and man. A Latin version of the myth makes him the first king of Latium; besides, however, he remained the tutelar god of lying-in women and sucklings—consequently the god of life.

With the increasing personification of the gods everything in nature became either a product or an attribute of the gods.

So fire was now no longer a god but was produced by a god. A god starts the sun fire, which had expired, by boring in the sun disc anew each morning; he produces lightning when he casts a dart in the storm clouds. As with the heavenly fire so with the earthly, it must always be generated anew. When the fire goes out Agni has disappeared; he must have hidden himself. As he hides himself in heaven in a cloud (the cloud tree), so he hides himself on earth in the wooden disc, from which he can be called forth by boring and rubbing. Here we meet a new personage in the myth, whose oldest name (in the Vedas) is Matarichvan. Matarichvan brings Agni, who is hidden in the clouds or in the woods, back to earth. According to another version he finds Agni in a cavern. He brings to man the light and warmth which he needs to live. His name signifies "he who swells or works in the mother"—that is again lightning or the boring stick.

Matarichvan, the fire-bringer, corresponds in the Greek myth to Prometheus. In historical times the name Prometheus, which has experienced various changes, has been interpreted as "forethought." As an older form he is, among other things, referred to as "Pramantha." This name has a double meaning. It signifies first the "forth-rubber," that is, one who through rubbing brings something forth.

Through rubbing he brings the fire forth and generates man. Here it is to be noted that "matha" signifies the male genitals. The second meaning of Pramantha is the fire-robber. Close to the idea that Prometheus-Pramantha created the fire, is the other idea, that he—like Matarichvan—brought or stole the fire from heaven. He concealed the sparks in a shrub, that is, one of the sort of wood that serves for the creation of fire.

In the myth we thus see fire represented in three different forms: as fire (fire-god), as fire-maker (or rubber, or fetcher) and finally as man. Man in the myth, is in so far also identical with fire, as the first man sometimes springs from fire, and because man conceals within himself the fire of life.

V

Infantilism in Individual and Folk Psychology. Wish-fulfillment in Dream and Myth

The short presentation, which I have made, is capable of giving only an incomplete idea of the multiplicity of sources which

meet in the Prometheus saga. Their investigation was of the greatest scientific significance. They led to a break with the common view that the myth is a figurative expression of a philosophical or religious thought. Kuhn sought to show that every myth rests on a natural intuition. He pointed out that every myth outside of the content which is evident at once from the meaning of the words, has still a latent content, which is concealed behind symbolical expressions.[23] Whoever is acquainted with Freud's method of dream interpretation and the dream-theory, which was derived from it, will observe, that between Kuhn's interpretation of the Prometheus saga and Freud's interpretation of dreams far-reaching analogies exist. When to two structures which outwardly show such important differences, as is the case with dreams and myths, the same methods of investigation are applicable, one is able to see therein a new confirmation of the hypothesis that behind outer differences there lies concealed an inner relationship. The example of the Prometheus saga will serve to demonstrate the psychological relationship of dreams and myths.

The myth of Prometheus, so far as it occupies us here, may be told in a few words. The significance, which the true sense of these few words reveals to us, takes a very much greater space. Quite similar relations exist in the case of dreams. A short dream contains much more than we could guess from the simple relation. In the same way as Freud has established in dreams, so in myths, there is found concealed behind the manifest content a latent content. For the discovery of the latter a method of interpretation is needed. This must, the same as in the interpretation of dreams, discover the ideas and feelings of the whole material, which have found expression in the myth.

The more or less important differences of the latent and manifest dream content explains why the dreamer only seldom is able to understand his own dream. He interprets the dream to himself as senseless, absurd, and disputes probably the idea that the

[23] Kuhn is not afraid to speak openly of the sexual character of these symbols. That such a doctrine should be attacked as unscientific and immoral we have, in our day, sufficiently endured. Steinthal undertakes, in his work already cited (p. 3), to defend Kuhn on both sides. I cannot refrain from quoting his words here, because they appear to be directed prophetically against the opponents of the Freudian teachings. "When with the exactness, and the conscientiousness of a judge, the importance of each reason is examined and without persuasion is presented ungarnished and the conclusions always drawn with the greatest caution, it merits not only scientific but moral recognition."

dream contains any sense at all; if he tries really to penetrate the significance of his dream he gives an insufficient explanation because it only takes into consideration the manifest content. It is not otherwise with the folks! They likewise do not understand the latent content of their myths. They give an insufficient explanation of them. An example will easily explain this. The dreams of the death of near relatives, with which we have already occupied ourselves, are, by the persons in which they occur, probably without exception falsely interpreted. Quite similarly the Greeks mistook the true meaning of the Prometheus saga. They misunderstood even the meaning of the name Prometheus. We will return to this point.

The fact that the myth-creating people suppress their own mental product as the dreamer does in his dream requires an explanation. Freud gives as the key to this riddle: "The dream is a fragment of the repressed life of the infantile psyche." This assertion is not understandable without something further. Freud comes to his view in the following way. Our mind preserves far more impressions than our memory is commonly aware of. Especially do we "forget" readily such reminiscences as are associated with a painful feeling-tone. They are, however, not absolutely obliterated, but only the capacity for voluntary reproduction is withdrawn. We have already come to know this process of repression into the unconscious. Especially do we tend to put out of our consciousness wishes that remain unfulfilled or are unfulfillable on account of the painful feeling-tone that is attached to them. Dreams receive a large and essential portion of their material from repressed ideas; only a smaller and less important part of the dream content is actually of recent occurrence. The same thing holds true when the activity of consciousness is disturbed by pathological processes. Then also old reminiscences rise up out of the depths of repression. We may observe this especially well in hysteria and dementia præcox. The idea of repression is indispensible for the explanation of the most various pathological symptoms. The repressed memories may originate at any age. The results of careful analysis have succeeded in showing, however, that the ultimate basis of a dream or of the symptom of a given mental disease, is a reminiscence of childhood. The child fulfills his wishes, the real, unrepressed ones even, so far as they are not realized, in day and dream phantasies. In later years

these phantasy activities are, by preference, relegated to sleep. In the dream the adult preserves, not only the childhood species of thinking but also the object of the infantile thoughts. The infantile wishes and events rest in the bosom of the unconscious, only apparently forgotten. They wait here, in a way, until the individual has an experience which is analogous to an infantile occurrence. Then that which is analogous will become assimilated to the earlier experience. So the infantile memory experiences a reinforcement in the unconscious. When it attains a certain intensity it expresses itself in normal individuals in dreams, in neurotic or psychotic individuals in the symptoms of the disease. It needs two conditions: a lowering of conscious activity as occurs in dreams and certain pathological states, and an actual occasion. In general one is not inclined to concede to infantile occurrences and wishes such comprehensive results, as I do with Freud. One will object that the infantile interests are suppressed by others in later life. Still that is, as will be shown, only on apparent counter argument. The significance of infantile emotions and reminiscences for normal and pathological psychology was never estimated at its true value until the appearance, in 1895, of the "Studien über Hysterie" by Breuer and Freud. It remains the service of these two authors to have directed attention to the significance of infantile reminiscences. Freud still further elaborated these teachings in the following years. The view of the significance of infantile events has, to be sure, experienced substantial alterations, which, however, in no way means an abandonment of the doctrine of psychic infantilism. That the early infantile reminiscences exercise so great an influence on the psychic development of the individual we may perhaps be able to explain. If the child has many experiences which are determined by outside causes, and so are not grounded in his individuality, yet there are still others that proceed directly from his own characteristics. In two small contributions[24] I have attempted to show this for certain sexual happenings in childhood. We can formulate the results in general as follows: a part of the happenings, and probably the most affective, the child owes to his inherent, inborn emotivity. In this way it comes about that the child

[24] Abraham, "Über die Bedeutung sexueller Jugendtrauman für die Symptomatologie der Dementia praecox," *Zentralblatt für Nervenheilkunde und Psychiatrie*, 1907, and "Das Erleiden sexueller Traumen als Form infantiler Sexualbetätigung."

in early youth has not yet learned to subordinate, on ethical grounds, certain wishes, that his nature is not yet blunted but is alive to all impressions, that it therefore reacts with greater and less restrained intensity.

The memories of childhood assimilate later. Namely, the repressed infantile wishes establish themselves in the later life. I am reminded here of the infantile preference of the son for the mother and his rivalry with the father as well as the wish associated with this feeling. An actual occasion wakes again this memory of childhood. Now it finds expression in a dream. This example stands for many that serve to explain the sense which Freud gives to the dream as a fragment of the repressed life of the infantile psyche.

In the dream the infantile phantasy activity, together with its objects, continues to live. The analogy of the myth with the dream discloses itself now at a stroke. The myth springs from a period, in the life of a people, long gone by, which we may designate as the childhood of the race. The authority for this comparison is easy to show. An expression, which Freud makes use of in the "Traumdeutung" illustrates this well. Freud designates the period of childhood, which we remember only indistinctly, as the prehistoric time in the history of the individual. Although our reminiscences of that time are very indefinite, still they have not passed by without leaving impressions behind. The wishes that lay in our heart at that time and which we at best remember in an imperfect way, are not wholly effaced, but only repressed and continue to live in our dream-phantasies. All this takes place also in the myths. They originate in the prehistoric times of the race, and have come down to us from the indefinite traditions. They contain memory rests from their childhood. Can the wish-fulfillment theory of dreams also be transferred to myths?

I maintain this and formulate my view, in harmony with Freud's teachings in regard to dreams, as follows: The myth is a fragment of the repressed life of the infantile psyche of the race. It contains (in disguised form) the wishes of the childhood of the race.

We have already found important evidence for this view by comparing certain myths with "typical" dreams. We saw that in the Œdipus saga, as in certain dreams, the infantile sexuality

found expression. From the sexual transference of the libido of the son on to the mother arose wishes which as with many others availed themselves of repression. Education is nothing but a forced, systematic repression of inborn tendencies.

In the youth of a race, when more natural relations still prevail, when the conventions have not yet assumed rigid forms, every tendency could be realized. At a later time they were suppressed by a process which we can designate in the individual as repression. But they do not die out wholly but are retained in the myths. This process, for which I might propose the name of "mass repression," is the reason the people no longer understand the original meaning of their myths quite as we can not understand our dreams without some explanation.[25]

It appears that a people whose myths are concerned with its earliest childhood express in them such wishes as they have been accustomed to repress most strongly. Let us consider the biblical description of Paradise! Freud has aptly characterized it: "Paradise is nothing but the mass phantasy of the childhood of the individuals." Genesis relates of Adam and Eve, with special emphasis, that they were naked and were not ashamed. We know that the custom of the Jews rigidly required the clothing of the body. The infraction of this custom was always especially censured in the biblical stories. We find again, in a typical dream, a parallel to the mass phantasy of the nakedness of the first man. We all occasionally dream that we are going about in very deficient clothing, even moving about among people, who, however, take no notice of our state. The affect of anxiety which accompanies this dream corresponds to the strong repression of the infantile wish to show ourselves naked before others. Freud has brought a great amount of evidence to show that in this dream we are dealing with an infantile nakedness phantasy ("Traumdeutung," S. 166 f.). He recalls in this connection, that children take great pleasure in showing themselves naked before other children or adults or exhibiting before themselves. There are people, in whom these infantile adnexa of the sex instinct are retained in abnormal strength and the normal activity is fully pressed aside: they are the exhibitionists.

[25] That a people no longer understands its own myths can not be due to their having taken them over partly from other peoples. They could only have taken them over because they found their own complexes in them. These, however, were just the ones repressed. Besides each people alter myths they take over; they must then at least understand the meaning of the alteration; this is, however, not the case.

The very rigorous ethics of the Jews in regard to the sexual relation demanded that the mass phantasy of nakedness be transferred to the earliest childhood of man. The Greeks, who were ashamed of nakedness in a much narrower sense, did not need to go back so far. Freud has shown that the saga of Odysseus and Nausicaa deals with the same theme. He therefore puts it parallel to the above-mentioned nakedness dreams.

The Greek Prometheus saga corresponds to the biblical story of the creation of the first man. As we saw, it is differentiated from it by the lack of one of the analogous ingredients of the nakedness phantasy. It contains, on the contrary, the story of the stealing of fire, for which the biblical presentation offers no correlate. We have now to discover what repressed mass phantasies or wishes find expression in the Greek anthropogeny, especially also, of what significance, in this respect, the robbery of the fire is. In order to attain this object we must first consider certain general characteristics of myths, and for the explanation of these turn back again to Freud's theory of dreams.

(*To be continued*)

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Original Articles

A CASE OF ALEXIA AND HEMIANOPSIA: WITH REMARKS ON THE LOCALIZATION OF SUCH LESIONS[1]

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Case A. F., admitted to New York Neurological Institute, September 9, 1911. Age 23; female; United States; single; bookkeeper.

Family History.—Negative, except father is alcoholic.

Previous History.—An American woman 23 years of age. Early life uneventful. High school education; bookkeeper by occupation, fairly efficient; no history of severe diseases or traumata; has always had good health.

The development of the neurological disorder is sudden. Patient was perfectly well until August 31, 1911, when she complained of a tired feeling, and while at work she suddenly experienced weakness in the right hand and became dizzy. In her own words—"While writing, my pen fell out of my hand, my

[1] The case was presented before the New York Neurological Society, October 3, 1911.

(*From the Third Division, New York Neurological Institute*)

right leg dropped from under the chair, and when I turned round to call one of the girls, I could not speak." There was no loss of consciousness and no convulsions were observed. Her employer tried to make her walk around the office, but she was unable to do so, because her right leg was very weak. She was put on the couch where she remained till late in the afternoon. When she returned home, she could talk, but used wrong words. For the ensuing three days she had headaches, could not see well, was unable to read and was slightly paraphasic. She felt that her right hand and leg were stiff, and had peculiar sensations behind the right ear. There was no nausea or vomiting.

September 19, she was admitted to the hospital. The neurological status revealed the following:

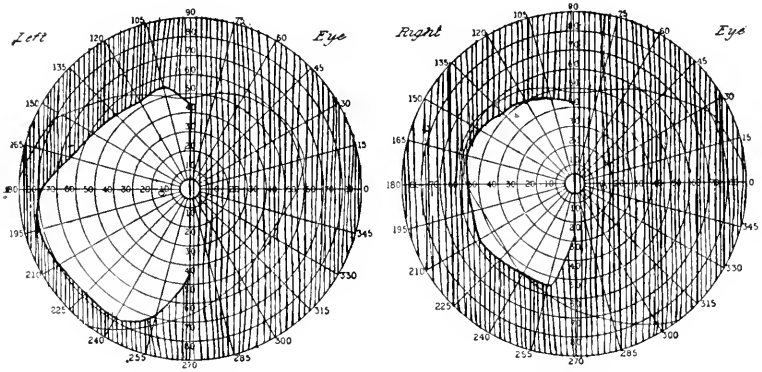

FIG. 1. Visual fields of the patient with alexia. Right homonymous hemianopsia.

Equal pupils which react promptly to light and accommodation; no nystagmus; no ocular palsies; slight diminution of the corneal reflex; complete right homonymous hemianopsia without anomaly of the fundi; active knee jerks; other reflexes were normal; no ankle clonus; no sensory disturbances, although at one time pain sense was diminished on the right side of the body. Wassermann test in the serum was negative. No cardiac disease; no tuberculosis and no arteriosclerosis. Urine acid in reaction and without abnormal constituents.

The charts will show the visual fields: perimetric tracings. (Fig. 1.)

Mentally, the patient was bright, fairly intelligent and presented no evidence of a psychosis. She complained of inability to read; she could not copy simple sentences. However, there was no defect in spontaneous writing, or writing from dictation. (Fig. 2.)

Following her admission to the hospital, more careful aphasic

examinations (according to A. Meyer's scheme) were made, and with the following results:

Patient had no difficulty in understanding spoken words; she carried out simple and complicated commands. Marie's test was satisfactorily performed. She recognized and named objects correctly. She repeated words, phrases and sentences. While in ordinary conversation one noticed no defect symptoms in spontaneous speech, still patient stated that at times she had some difficulty in finding proper words and frequently mistook names of persons, vegetables and fruit. It is important to emphasize that she had good insight into her paraphasic disorder.

Reading showed marked defect. She was unable to read a sentence or even complicated words. She picked out all letters of the alphabet correctly; however she could not name letters F, K and X, and mistook R for T, P for B, W for Y, C for L, P

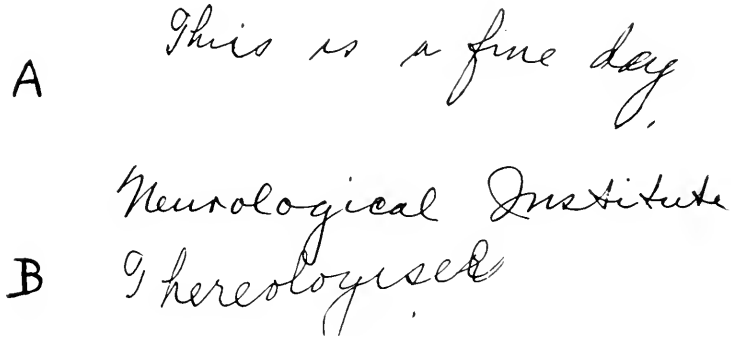

FIG. 2. Specimens of writing. *A*. Written from dictation. *B*. An attempt to copy line above.

for D, and J for P, R for F, S for J, and B for H. In reading simple words, she identified the letters first, then she combined them, and finally read the word, which was often incorrect.

She could read simple and complicated numbers. She performed tests in arithmetic. However, she stated that she had great difficulty with multiplication because of inability to retain figures. It took her an hour to do the multiplication example.

Patient identified some signs, such as Y. M. C. A.; Ill.; Pa.; B. R. T.; Penn.; P. S.; N. J.; N. Y. C.; U. S. A. She could not recognize the following: Ult., INST., U.S.M., Co., N. B., C. O. D., G. O. P., D. S. C., P. O. and others.

At the present time, the patient's writing reveals no anomaly. However, during the early part of her sickness, she was unable to copy, but could write spontaneously. Internal language was intact. There were no evidences of apraxia.

Mentally, patient presented nothing abnormal except slight im-

pairment of retention, especially for recent happenings. She could not retain names of new objects, and indeed she was unable to memorize the names of her physicians, nurses or fellow patients. However, her memory for *remote* events was good. No psychotic trends could be demonstrated.

In this case, we have a young woman with no evidences of syphilis, cardiac disease or trauma, developing rather suddenly a neurological disorder in which right homonymous hemianopsia with partial alexia and slight paraphasia were in evidence. The latter is not a constant feature.

The location of lesions which can cause such a condition has been the subject of much careful research. Dejerine (1 and 2) first accurately studied the subject and differentiated two forms of alexia (word blindness):

I. Word blindness with agraphia or marked writing defect.

II. Pure word blindness with integrity of writing both spontaneous and on dictation.

He considered that there is a definite center for visual word memory pictures which comprises the cortex of the angular gyrus of the left hemisphere. From a study of autopsy material, he concluded that word blindness with agraphia is caused by a lesion in the cortex of the angular gyrus destroying the visual word memory center and thus preventing the understanding of written words and reproduction of them.

In pure word blindness, the lesion is situated under the cortex of the angular gyrus, destroying the association fibers between the optic center and the angular gyrus, which prevents the understanding of written words. The lesion, however, does not destroy the center itself or the path from it to the graphic center and hence no agraphia.

Liepmann (3), without recognizing a specific center for visual word memory, explains the condition as follows: "Lesions which lie just posterior to the sensory speech center, namely in the gyrus angularis, and its superficial white matter, produce agraphia and alexia, together with slight indications of paraphasia and difficulty in finding words. On the other hand, lesions which extend from the median surface of the center deep in the white matter of the gyrus angularis cause pure alexia, that is, writing is intact, reading is impaired. This is almost always accompanied by right-sided hemianopsia, while the superficial lesions of

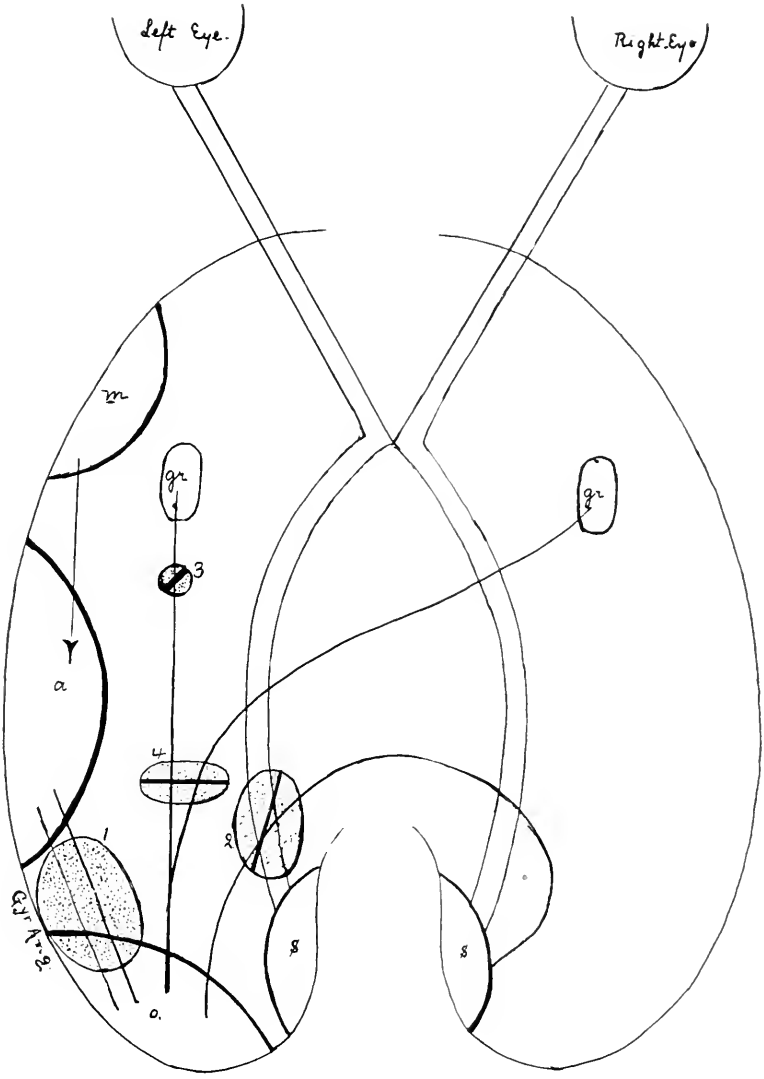

FIG. 3. Diagram showing locations of lesions causing alexia. (From Liepmann.) *a*, Sensory (acustic) speech area. *m*, Motor speech center. *o*, Center for optic memories. *s,s*, Visual centers (calcarine cortex). *gr*, Writing centers for right and left hands. *Gyr. Ang.*, Angular gyrus. Lesion 1 causes alexia and agraphia. Lesion 2, pure alexia with hemianopsia. Lesion 3, pure agraphia of only the right hand. Lesion 4, pure agraphia of both hands.

the gyrus angularis which cause alexia and agraphia frequently occasion no hemianopsia.

The simplest explanation is the following: The optic radiations run deep in the white substance of the gyrus angularis external to the posterior horn of the lateral ventricle through the white matter of the occipital lobe to the calcarine region, the left and right visual center (S. S'.). (See Fig. 3.) From here connections are made with the convexity of the occipital lobe, the seat of visual form memories (S. O.) which are situated principally in the left occipital lobe, but to some degree, also in the right. The fibers from the right occipital lobe pass through the splenium of the corpus callosum to the convexity of the left occipital lobe (S'. O.). From the sensory speech center, an association tract passes to the convexity of the occipital lobe (A. O.). From O. to the hand center (*gr*) goes a tract which conveys optic direction to the hand center.

The nature of the lesion is difficult to determine, but the following conditions should come under consideration:

1. Cerebral hemorrhage; however, we have no evidences of cardiac disease or arteriosclerosis to support this assumption.

2. Cerebral endarteritis; this can be excluded on the ground that there is no history of syphilis or other infectious diseases and moreover, the Wassermann test in the serum is reported negative.

3. An atypical form of multiple sclerosis; this condition may be ruled out on the ground that there is no history of early visual disturbances or transient palsies, and furthermore, we have no evidences of pyramidal irritation, or incoördination.

4. Brain tumor; the sudden development, absence of optic neuritis, and other manifestations of increased cranial pressure will speak strongly against such a diagnosis. Nevertheless, one can conceive of a small slowly growing tumor around which a hemorrhage has taken place due to erosion of a vessel wall, as a cause of such a picture.

5. An hysterical condition might be thought of, but such a definite symptom complex based on some known anatomic localization and without other hysterical stigmata will point rather to an organic reaction.

6. Polioencephalitis might be regarded, but there is no history of fever, or a history of infectious disease.

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2. Dejerine et Thomas. Un Cas de Cécité Verbale avec Agraphie suivi d'Autopsie. Revue neurologique, 1904, No. 13.
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SYPHILIS A POSSIBLE CAUSE OF SYSTEMIC DEGENERATION OF THE MOTOR TRACT.[1]

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Many years passed before syphilis was generally recognized as the chief cause, and possibly the only cause, of tabes dorsalis, and it is largely owing to Erb that this recognition has been obtained. There is no objection on a priori grounds in accepting syphilis as a possible cause of the various diseases of the motor system, as primary lateral sclerosis, amyotrophic lateral sclerosis, and progressive spinal muscular atrophy. That in parasyphilis we may have a degeneration of the afferent fibers of the cord, viz., of the posterior roots and of their continuation within the cord, is a fact accepted by most neurologists. Can we have a similar degeneration of the central motor tracts and of the cells in the anterior horns of the spinal cord, or a combination of this type with degeneration of the posterior root fibers, as another form of parasyphilis? This idea is comparatively new, and yet there is no reason why this condition should not occur. If we accept this possibility then the diseases under consideration can not be regarded as always abiotrophic, even though they may be in certain instances.

Syphilis we accept as a cause of tabes, and in many cases we find no other signs of syphilis in the spinal cord than the degeneration recognized as tabetic in type, *i. e.*, the syphilitic poison has affected only nerve fibers. In many cases, however, a dense or moderate round cell infiltration of the pia occurs, and the degeneration of the posterior columns is systemic in character, and differs in no way from that of tabes, yet we regard these cases as examples of the more acute manifestations of syphilis, and attribute the degeneration of the posterior columns and the round cell infiltration to syphilis. It is very questionable whether

[1] Read at the Thirty-eighth Annual Meeting of the American Neurological Association, May 30, 31, and June 1, 1912.

From the Department of Neurology and the Laboratory of Neuropathology of the University of Pennsylvania and from the Philadelphia General Hospital.

in many of these cases we can make the systemic degeneration secondary to meningitis. The common lesions of syphilis of the spinal cord are lymphocytic infiltration and thickening of the walls of the vessels, and yet the latter is not always present. The round cell infiltration in many instances probably causes no lesions, but is an index of the syphilitic poison.

I have repeatedly found a degeneration of the pyramidal tracts of the spinal cord, apparently primary, with marked lymphocytic infiltration of the pia. It seems improbable that the lymphocytic infiltration causes this degeneration, but it is likely that both have a common cause, the syphilitic poison. If motor fibers are susceptible to the syphilitic poison, it is natural to infer that motor cells likewise are susceptible, and it is not unreasonable to suppose that cases may exist in which the syphilitic poison exerts its influence chiefly on the motor system and produces little lymphocytic infiltration. What evidence can we find in literature as to muscular atrophy resulting from syphilis?

Muscular atrophy with tabes has been observed repeatedly since Charcot and Pierret reported a case of this kind in 1871. A recent review of the literature has been given by C. M. H. Howell in a paper by him and H. H. Tooth, in which the authors report a case of tabes with muscular atrophy, but not of the Aran-Duchenne type. Howell says he has examined in detail six cases of progressive muscular atrophy, and in none of these was there any distinct evidence of syphilis either in the meninges or in the blood vessels. It is clear, he says, that direct evidence as to any causal connection between syphilis and primary cell degeneration is very difficult to establish. If syphilis be the cause of cell degeneration in such cases as these, and he does not deny the possibility of this, it seems rather strange to him that this type of case is not more commonly met with. Syphilitic disease of the central nervous system is common enough, yet these cases of muscular atrophy with syphilitic origin in his opinion are decidedly uncommon. In my experience the frequency of these cases is much greater apparently than in his, and without any special search I report several cases that have recently come under my observation.

Also from a histological viewpoint the cellular changes, Howell says, are not those usually associated with the action of any toxin. I am inclined to think that the chronic cellular change from a

toxin may differ from the acute effects. The changes in the nerve cells of the spinal cord observed by Tooth and Howell[2] were diminution in the number of the cells in the ventral horn cells and lateral horn cells and Clarke's column of cells, and degeneration of the surviving cells. The latter were shrunken, distorted and often elongated, some were more globular than are normal cells, the Nissl granules had lost their definition and stained deeply, and the nucleus in some cells was displaced and stained more deeply than usual. Some cells presented a different picture; they showed chromatolysis and vacuolation. I should hesitate to say that alterations such as these could not be the result of a chronic disease like syphilis.

Marie and Leri[3] have considered syphilis in an etiological relation to progressive spinal muscular atrophy. Until the present time it has played a modest rôle in this respect. Aran, MacDowald, Thouvenet, Charcot have found syphilis in the history of amyotrophic patients; Hammond, Niepce, Fournier, Misserbi have observed the relation of cause and effect between the two disorders; Raymond described diffuse vascular meningo-myelitis in a syphilitic in whom the symptoms differed from those of Aran-Duchenne atrophy only in a few respects, viz., pain and paresthesia preceding the atrophy; Leri has found syphilis frequently in the etiology of spinal amyotrophy. Amyotrophy appears especially in adult age, and the male sex, and frequently Leri has found a period of 7 to 15 years between the syphilitic infection and the beginning of the atrophy.

In Dana's[4] 72 cases of progressive muscular atrophy 19 gave a history of syphilis, which would be about 25 per cent. In none of his three cases of amyotrophic lateral sclerosis was there a history of syphilis. In 33 cases, in which the symptoms began in the hand and arm, and were of the ordinary Aran-Duchenne type, there were 9 cases. Among the 14 cases associated with spastic symptoms there were 3 cases of syphilis, and in the bulbar or bulbo-cervical type, of which there were 11, there were 3 cases. In all types, therefore, whether beginning in the arms, legs, or muscles innervated from the medulla oblongata, the percentage of syphilis seems to be about the same.

[2] Tooth and Howell, Proceedings of the Royal Society of Medicine, Neurological Section, Feb., 1912.

[3] Marie and Leri, Traité de Médecine, Bouchard and Brissaud, second edition, Vol. IX, p. 637.

[4] Dana, JOURNAL OF NERVOUS AND MENTAL DISEASE, 1906, p. 92.

Objections have been made by Tooth and Howell that such arguments as are here offered are of the post hoc order and prove nothing. They are, however, suggestive.

Without attempting to collect all the reports of syphilitic muscular atrophy I refer briefly to a few. Lannois[5] reported a clinical case of muscular atrophy of the Aran-Duchenne type of syphilitic origin.

Merle's[6] case was one in which the only important symptom was muscular atrophy of all four limbs progressing during a period of 15 years. At necropsy many cells of the anterior horns were wanting, a slight thickening of the vessels and small collections of round cells in the pia were found; evidently it was a syphilitic process.

Vix[7] refers to a case of muscular atrophy reported by Oppenheimer. The atrophy began in the upper limbs, and the symptoms were those of progressive spinal muscular atrophy, and the atrophy extended to the lower limbs. Death occurred with bulbar symptoms. Meningitis was found and was most intense on the ventral surface of the spinal cord. The anterior roots were compressed by the thickened pia, and from this resulted the atrophy of the anterior horn cells and of the muscles. This is a different process from the more common form of syphilitic degeneration.

Vix reports a similar case with the clinical picture of progressive spinal muscular atrophy. Meningitis played the chief rôle, and caused degeneration of the anterior roots. The disappearance of anterior horn cells was secondary. Syphilis seems to have been the cause of the meningitis.

Vix refers to some of the literature on the relation of syphilis to progressive spinal muscular atrophy, and adds that the number of published cases carefully studied is too small for a decision as to which process is more common, viz., primary degeneration of the cells of the anterior horns or meningitis with implication of the anterior roots.

S. A. K. Wilson[8] has recently studied the Aran-Duchenne type of muscular atrophy occurring with tabes. He believes that among the types of tabetic muscular atrophy is one which by its

[5] Lannois, Nouvelle Iconographie de la Salpêtrière, Vol. XVIII, p. 593.
[6] Merle, Revue Neurologique, 1909, p. 877.
[7] Vix, Archiv für Psychiatrie, Vol. 47, No. 3, p. 1212.
[8] Wilson, Review of Neurology and Psychiatry, Aug., 1911, p. 401.

progressive nature and its functional distribution is definitely of central origin and analogous to the Aran-Duchenne type. Though not common, it can not be said to be a rarity. While no doubt some cases of this sort, especially some in which true tabetic symptoms are not prominent, are occasioned by a syphilitic meningitis, there are others where the amyotrophy is the result of a chronic process affecting the anterior horn cells more or less directly, *i. e.*, the accompanying vascular, meningeal, or peripheral changes are not sufficient to have produced it. In such cases it seems justifiable to conclude that the syphilitic toxin has been the cause, more particularly since the lesions are widespread, diffuse and irregular.

If this be true of the Aran-Duchenne atrophy occurring with tabes, we must assume it is equally true of this form of atrophy occurring with spinal syphilis, and if the atrophy be due to a chronic process affecting the anterior horn cells the evidence of spinal syphilis may be very slight.

I have therefore gone over my records and reëxamined nine previously reported cases of motor tract degeneration, and one unreported case which will be reported by S. Leopold, to determine in what proportion the most common finding of spinal syphilis, viz., a lymphocytic infiltration in slight or moderate degree, could be found in the pia; and some degree of this has been found in every case, although in some it was so slight as to be questionable. Lymphocytosis of the spinal fluid is valuable as a sign of syphilis though it is not pathognomonic. If the various types of primary degeneration of the central motor system are ever produced by syphilis, we should find at least some evidence of lymphocytic infiltration of the pia, even in the absence of thickening of the vessels. If this infiltration were not present in a certain proportion of the cases one might well doubt the syphilitic etiology. Its presence does not prove syphilis. The importance of lymphocytosis of the cerebrospinal fluid as a sign of syphilis is widely accepted. It is found in other conditions than syphilis, but so is the Wassermann reaction. Lymphocytosis has therefore a certain clinical value.

Nonne,[9] in his address at the 1911 meeting of the Gesellschaft deutscher Nervenärzte, said that from many clinical investigations and from the cases controlled by anatomical examination, we know

[9] Nonne, Deutsche Zeitschrift für Nervenheilkunde, Vol. 43, Nos. 3-6.

that lymphocytosis of the cerebrospinal fluid occurs in the true syphilitic and parasyphilitic diseases of the nervous system, whether they are progressive or have been arrested; whether they are in an incipient or advanced stage. The cause of this lymphocytosis is to be found in meningitis. Lymphocytosis of the cerebrospinal fluid occurs in a considerable number of individuals who have been infected with syphilis but have showed no symptoms. The syphilitic infection may have occurred many years previously without spinal cord or brain disease resulting therefrom. Nonne believes, without asserting it as a fact, that only those syphilitic persons develop nervous syphilis who have a lymphocytosis persisting after antisyphilitic treatment. He believes also that the lymphocytosis may be influenced by antisyphilitic treatment.

The following are cases of tabes or cerebrospinal syphilis with the Aran-Duchenne type of muscular atrophy, progressive spinal muscular atrophy probably of syphilitic origin, and brief summaries of cases of degeneration of the motor tract, previously reported, which have been reëxamined for evidence of lymphocytic infiltration of the pia and thickening of the vessels.

Case 1. Tabes with Typical Aran-Duchenne Muscular Atrophy and Disappearance or Degeneration of the Nerve Cells of the Anterior Horns of the Spinal Cord

M. P., laboratory number 577, entered the Philadelphia General Hospital November 4, 1909, and died there November 1, 1911, in the service of Dr. Mills. At the time of entrance he was said to be 75 or 80 years old. He has been deaf and dumb since birth. He had been active until the last 15 or 20 years of his life, but during these years he gradually became bedridden and blind. Previously he had been able to make his wants known by writing. Notes dictated by me January 15, 1909, when the man was in my service, are as follows:

He points to his eyes to indicate that something is wrong with them. So far as can be determined, he has no facial palsy. Reaction to light is entirely absent in each eye. Convergence reaction can not be tested. The left naso-labial fold is not so deep as the right. The masseter muscle contracts well on each side. He has lost most all of his teeth, but has no difficulty in swallowing solid food. So far as can be determined the extraocular muscles are normal, but it is impossible to make him move the eyeballs on command.

The upper limbs are greatly wasted and the atrophy is more

intense in the hands and forearms than in the arms. It is symmetrical in the two upper limbs. The thenar, hypothenar, and interosseous muscles have disappeared, and each wrist joint is very flaccid. Involuntary jerkings occur almost constantly in the upper limbs on active or passive movement, but are not present when the limbs are at rest. The upper limbs are very flaccid at all parts, but can be moved at the shoulders and elbows so that the hands are carried about the head in a very incoördinate manner. The biceps and triceps reflexes are entirely lost on each side. Fibrillary tremors are not present in the upper limbs. Pinprick is perceived promptly in both upper limbs and in the trunk. Tactile and thermal sensations can not be tested with certainty..

The lower limbs are much wasted, the feet and legs more so than the thighs. There is marked talipes equino-varus. The patellar reflex and the Achilles tendon reflex are entirely lost on each side. Babinski's sign is not present. Irritation of the sole of either foot produces no movement of the toes, because of the contracture of the muscles. The great toe on each side is contractured as in some cases of Friedreich's ataxia. Pinprick is promptly perceived in the lower limbs. Voluntary power is almost entirely lost. When the lower limbs are pricked with a pin they are drawn away slightly. The power in the lower limbs is much less than in the upper. Involuntary jerkings are seen in the lower limbs on attempted movement.

On October 26, 1911, notes were made that for a week the man had great difficulty in swallowing; he had been having soft diet but even on this he frequently choked, and the obstruction was removed by mechanical means. He howled much and disturbed the other patients. Difficulty in breathing became evident with signs of broncho-pneumonia. The Wassermann reaction tested by Dr. E. Corson White was negative.

The anterior roots of the cervical and lumbar regions were somewhat wasted. Sections from the lumbar region showed diffuse degeneration of the posterior columns, but the posterior roots were very slightly degenerated. The cells of the anterior horns were not so numerous as they should be, and here and there one of these cells presented chromatolysis and peripheral displacement of the nucleus. A very slight round cell infiltration of the pia was found, and there was some thickening of the pial vessels. Marchi sections showed no recent degeneration.

Sections from the eighth cervical and first thoracic segments showed moderate degeneration of the columns of Burdach, but more intense degeneration of the columns of Goll. The cells of the anterior horns at these levels were very scarce, and those preserved were much shrunken. Rarely one was found presenting chromatolysis. Very slight round cell infiltration was present in the pia. Marchi sections showed no recent degeneration.

The optic nerves and chiasm were intensely degenerated.

Some of the vessels of the pia of this part were thickened, and a considerable round cell infiltration of the pia was present in certain parts.

The paracentral lobules showed slight round cell infiltration of the pia, in some parts the pia and its vessels were thickened. Some of the Betz cells were degenerated.

Case 2. Cerebrospinal Syphilis with Typical Aran-Duchenne Muscular Atrophy and Alteration of the Cells of the Anterior Horns of the Spinal Cord

C. F. W., laboratory number 595, a man 48 years of age, was admitted to my service in the Philadelphia General Hospital in January, 1912, and died there February 16, 1912. He acknowledged four or five attacks of gonorrhea but had no knowledge of syphilitic infection. His wife gave birth to two children; one died of marasmus, the other of unknown cause. Two or three years ago he was in the venereal wards of the hospital because of some eruption on the legs.

He had been in poor health nine years, and had been getting gradually weaker. He had had pains in the lower limbs during the past year. He complained on admission of incontinence of urine, weakness of the lower limbs, and atrophy of the muscles of the hands. He had also pain in the shoulders. The atrophy of the hands was noticed a little more than two years before his admission to the hospital. Sexual power had been lost two years.

The right pupil was larger than the left, the irides did not react to light. The hands were greatly wasted, so that the thenar and hypothenar eminences had almost disappeared. The forearms also were much atrophied, and the upper arms less so, and the appearance was that of advanced Aran-Duchenne muscular atrophy. Fibrillary tremors were not observed. The biceps tendon reflexes were slightly exaggerated; the triceps tendon reflexes were normal. Slight ataxia was observed in the finger to nose test. The power in the upper limbs was proportionate to the preservation of the muscles.

The muscles of the thighs and calves were somewhat atrophied. The patellar reflexes were exaggerated. The right Achilles reflex was diminished, the left was normal. Sensation was normal in the lower limbs. The man swayed a little in standing with eyes closed and his gait was a little ataxic. The Wassermann reaction tested by Dr. R. C. Rosenberger was positive.

The man began having convulsions on February 16, at first tonic and later clonic, and had one about every half hour until 3.30 P. M. The left upper limb usually was more implicated in the convulsion than the right, but some attacks were confined to the right side. He died within a few minutes after one of these attacks.

Pronounced round cell infiltration was found throughout the pia over the cord, at the base of the brain, and over the paracentral lobules, also moderate round cell infiltration was found about the vessels within the nervous tissues. The pial vessels were moderately thickened. The pia over the paracentral lobules was thickened. Some of the nerve cells of the anterior horns in the lumbar region presented great alteration, consisting of swelling of the cell body, loss of dendritic processes, chromatolysis, and peripheral displacement of the nucleus, but there was no distinct diminution in the number of the cells. There was a very noticeable diminution of nerve cells in the anterior horns of the eighth cervical and first thoracic segments, especially in the horn of one side, and in both anterior horns the cells preserved presented a shriveled appearance. There was not the prevailing type of degeneration seen in the lumbar region, although a cell here and there presented a similar alteration. The diminution in number and the atrophy of cells was detectable throughout the cervical swelling. The anterior roots appeared to be in good condition.

The crossed pyramidal tracts were much degenerated in the lumbar region, and an area of degeneration was found in the posterior columns on each side of the posterior septum. The posterior columns and the crossed pyramidal tracts were much degenerated in the cervical region. The region of the direct pyramidal tract was much degenerated on each side. The anterior pyramids of the medulla oblongata were not degenerated. The Betz cells of the paracentral lobules were in a good state of preservation.

Case 3. Spinal Syphilis with Typical Aran-Duchenne Muscular Atrophy

John T., aged 57 years, was a patient in my service at the Philadelphia General Hospital. He was admitted March 14, 1912. His chief complaint on admission was shooting pain throughout his body and limbs, numbness of the legs and arms, and a feeling of compression about the waist.

He had a chancre when about twenty years of age, and "cured" himself with copper sulphate. "Rheumatic" pains have been felt for years, but they have become more severe during the past two years. He has difficulty in controlling the bowels and bladder.

Both upper limbs, especially the left, show atrophy in the forearms and hands of the Aran-Duchenne type (Figs. 1 and 2), *i. e.*, the interosseous muscles and the thenar and hypothenar eminences are much wasted. The hands present marked tremor, so that it is difficult to photograph them. The grasp of each hand is fair. The movements of the upper limbs are free, and the left hand is moved better than the right. Pinprick is not felt in an area two inches in width below the nipples. Touch is perceived here. Biceps and triceps reflexes are very weak.

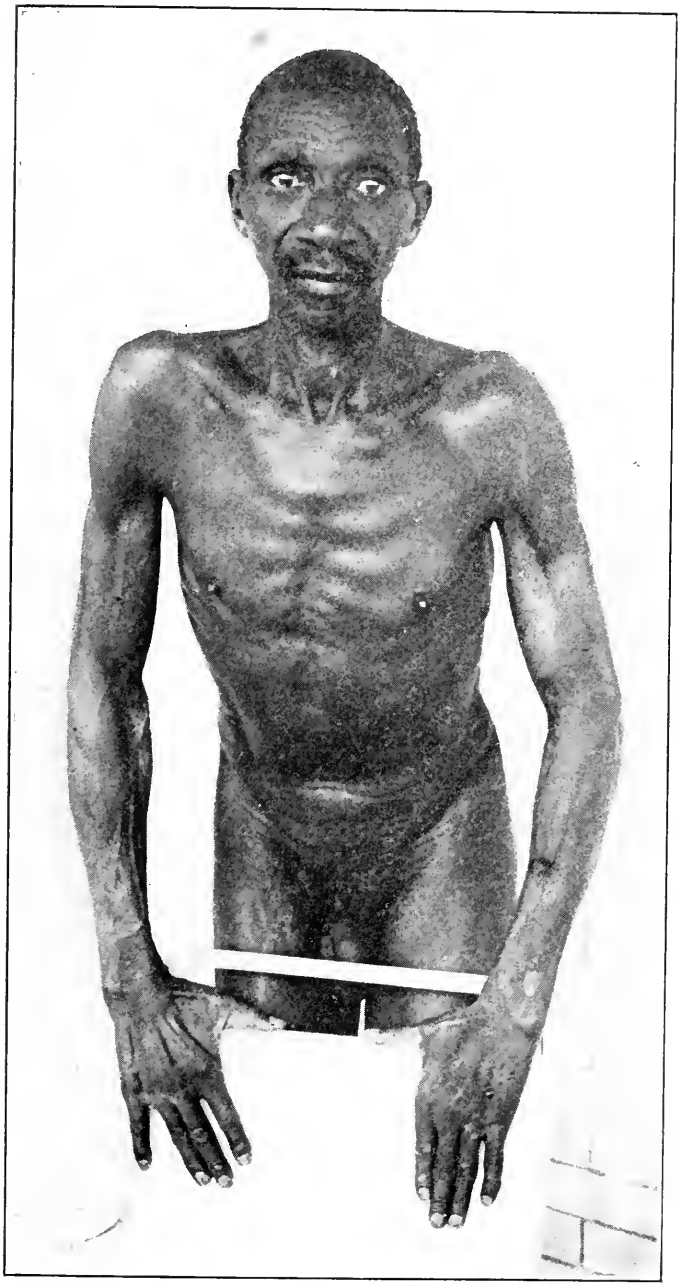


FIG. 1. Case 3. Spinal Syphilis with Typical Aran-Duchenne Muscular Atrophy.

The thigh muscles show loss of power in extension and flexion. The feet are not moved with normal power, especially the right foot. The patellar reflexes are much increased. The lower limbs are spastic. Ankle clonus and Babinski reflex are present on each side at times. No alteration of sensation is found in the lower limbs.

Case 4. Progressive Spinal Muscular Atrophy, Probably Syphilitic in Origin

Louis J., aged 61 years, was a patient in my service at the Philadelphia General Hospital in 1912. He acknowledged that he

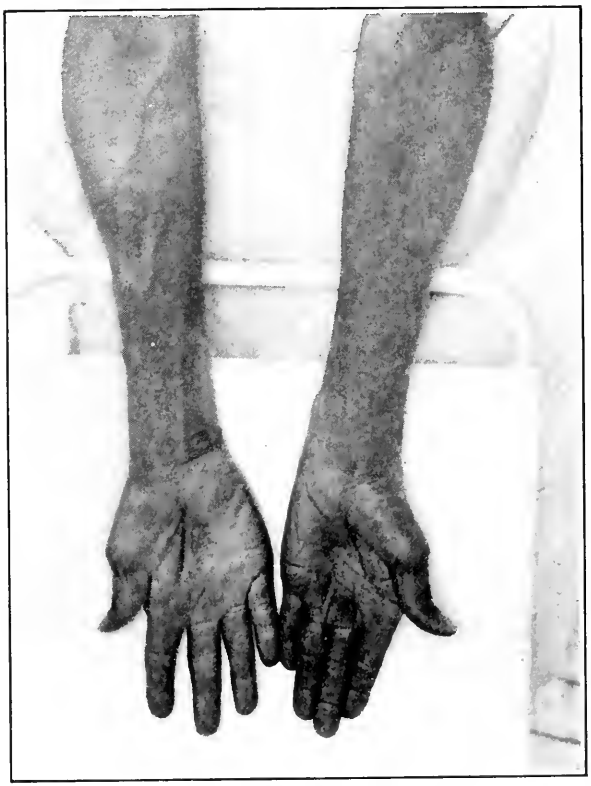


Fig. 2. Case 3. Spinal Syphilis with Typical Aran-Duchenne Muscular Atrophy.

had a soft chancre 35 years ago, and his hair began to come out soon afterward. Seventeen years ago he noticed he was obliged to rest frequently in his work. His upper limbs became tired

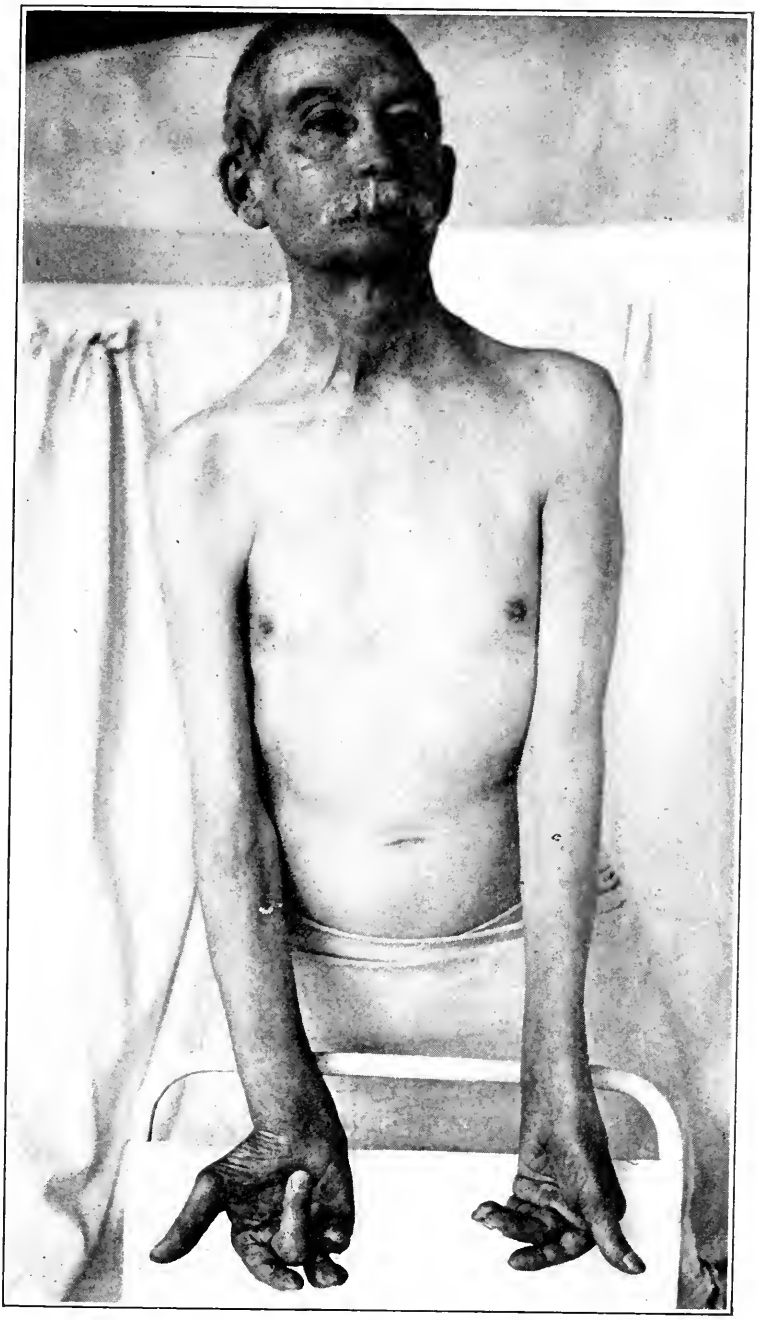


FIG. 3. Case 4. Progressive Spinal Muscular Atrophy Probably Syphilitic in Origin. The Atrophy Developed During a Period of Seventeen Years.

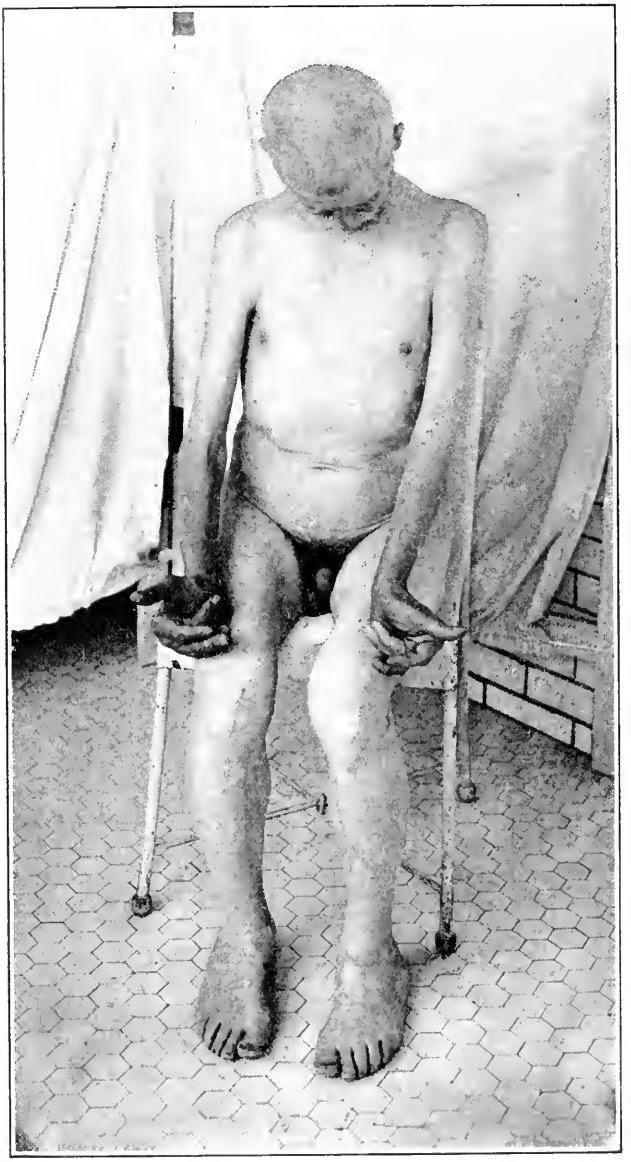


FIG. 4. Case 4. The Man was Unable to Hold the Head Erect, it Fell Either Forward or Backward.

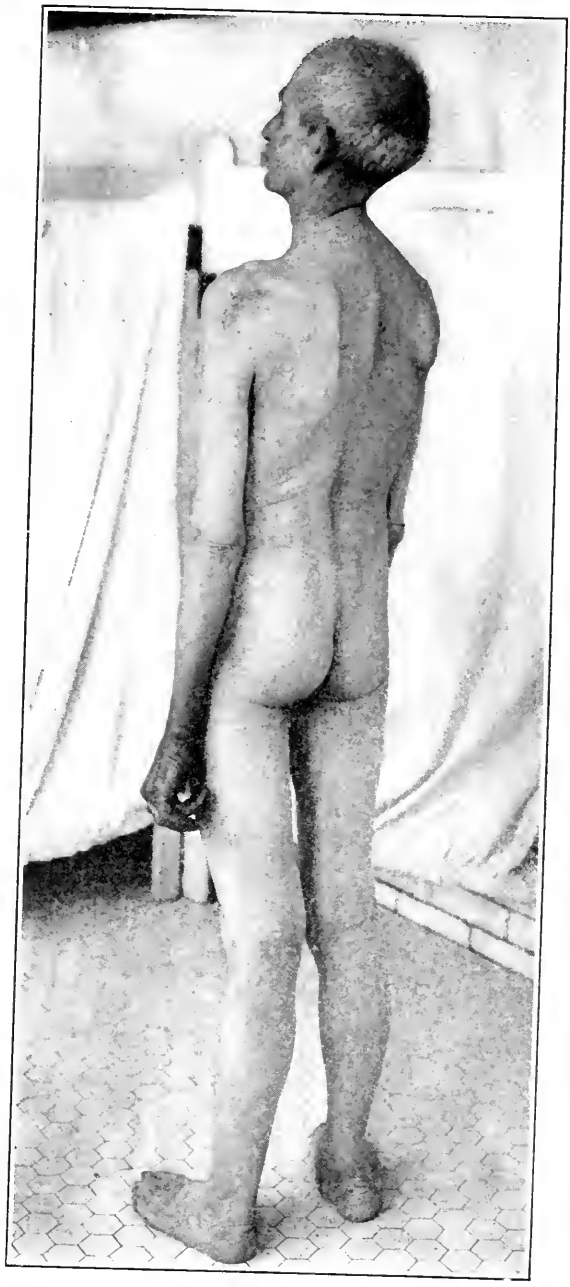


FIG. 5. Case 4. Showing Falling of the Head Backward.

easily, especially the left. He is left-handed. The weakness began in the left shoulder muscles and extended to the left arm, forearm and hand in the order named. About one year later the right shoulder became affected and the weakness then descended the right upper limb. The weakness and atrophy have steadily progressed in the upper limbs. Shortly after the onset of the disease the man had numbness and tingling in the feet and stumbled occasionally when walking. About six years ago the muscles of the neck began to atrophy. He has never lost control of the bowels and bladder. He has had difficulty in swallowing about five years, and this difficulty appeared soon after the atrophy of the neck muscles began. He has had difficulty in chewing a few years.

The man is unable to hold the head erect because of the atrophy of the neck muscles (Figs. 3, 4 and 5); it falls forward on his breast or backward. The muscles of the hands, upper limbs, shoulder girdle and neck are greatly atrophied. Fibrillary tremors are present below the clavicles and in the forearms. Voluntary power in the upper limbs is feeble. He can not abduct the upper limbs to a right angle with the body, or raise them above the head, but he can flex the forearms on the arms and flex and extend the wrists. He can not flex or extend either thumb. The first and ring fingers of the left hand can be extended, the others very little. The grip in each hand is feeble. The biceps tendon reflexes are diminished, the triceps tendon reflexes are a little increased.

The muscles of the thighs and legs are well preserved. The patellar reflexes are slightly exaggerated or normal. Stimulation of the sole of either foot causes a quick upward movement of the big toe. The man staggers considerably when walking with the eyes closed. Touch, pain and temperature sensations in the upper limbs are normal. Dr. E. Corson White reported that the Wassermann reaction with 0.1 c.c. was doubtful; with 0.4 c.c. was positive. Noguchi reaction was weakly positive.

This case presents the appearance of progressive muscular atrophy of spinal origin extending over a period of seventeen years. The venereal sores followed by falling out of the hair, the numbness and tingling in the feet at the onset of the disease, the positive Wassermann when a larger quantity of serum was used, and the weakly positive Noguchi reaction suggest syphilis as the cause of the atrophy.

The following are brief summaries of cases of disease of the motor tract that have been reported by me in connection with others or alone during the past thirteen years, and have been reëxamined for evidence of syphilis.

A Case Typical Clinically and Pathologically of Amyotrophic Lateral Sclerosis.[10]

The patient was a male, aged fifty-three years. For five or six months before admission to the hospital he had complained of pains in both lower limbs below the knees. These pains were thought to be from fatigue. On admission the lower limbs were somewhat spastic and the reflexes were exaggerated. Three years later the weakness and rigidity of the lower limbs had become intense. About this time speech became bulbar in character. The upper limbs gradually became spastic. He died about six years after the beginning of symptoms, after his limbs had become weak, spastic and atrophied, the tendon reflexes had become exaggerated, and bulbar symptoms had developed.

The pathological findings were typically those of amyotrophic lateral sclerosis. The microscopic study revealed degeneration of the nerve cells of the anterior horns of the cervical and lumbar regions, rarefaction of the anterior horns, degeneration of the crossed and direct pyramidal tracts, in the former extending beyond the area of these tracts, and extending as high as the pons, and a slight sclerosis of the posterior columns in the lower cervical and upper thoracic regions.

Recent reëxamination of the slides for signs of syphilis has shown very slight round cell infiltration of the pia of the anterior septum in the cervical region. It is one of the cases with the least lymphocytic infiltration. The vessels are not thickened.

A Case Typical Clinically and Pathologically of Amyotrophic Lateral Sclerosis, with Degeneration Extending to the Motor Cortex[11]

A man, aged fifty-five years, began to have dysphasia, dribbling of saliva, and loss of power in the upper and lower limbs. These symptoms increased until he became confined to his bed and almost completely paralyzed. The tendon reflexes were exaggerated, and fibrillary tremors were noticed in the tongue and other muscles. Sensation was not disturbed. Muscular atrophy was intense. Death occurred about one year after the onset of the disease.

The findings were typically those of amyotrophic lateral sclerosis. The anterior roots of the spinal cord were atrophied. The nerve cells of the anterior horns were degenerated, especially in the cervical region. Degeneration in the motor tracts extended from the cerebral cortex to the lumbar region of the spinal cord.

Reëxamination of the sections revealed slight accumulations of round cells in the pia of the lumbar region (Fig. 6), more here

[10] Dercum and Spiller, The Journal of Nervous and Mental Disease, Feb., 1899.

[11] Spiller, Contributions from the William Pepper Laboratory of Clinical Medicine, 1900.

FIG. 6. Amyotrophic Lateral Sclerosis with Degeneration Extending in the Motor Tract to the Motor Cortex. Death in about One Year from the Onset of the Symptoms. Collections of Lymphocytes were Found in Moderate Amount. (Photograph by Dr. A. J. Smith.)

than at higher levels; the vessels were not thickened. This case is especially important on account of the short duration because it is in a case of this kind lymphocytic infiltration would be most likely to occur.

A Case of Primary Degeneration of the Motor System[12]

Sarah L., about sixty-two years of age, became spastic and difficulty in swallowing developed. Gradually all four limbs became paralyzed and control of the bladder and bowels was lost.

The findings were degeneration of the pyramidal tracts and of the nerve cells of the anterior horns and medulla oblongata.

Reëxamination of the sections has shown very slight round cell infiltration of the spinal pia of the anterior septum in the lumbar region.

A Case of Primary Degeneration of the Pyramidal Tracts[13]

Alice G., aged fifty years, developed suddenly weakness in the left upper limb with loss of speech. The power of speech was regained after a day or two, but was never again normal. The weakness almost disappeared in the left upper limb after about three weeks. Two years after this attack she noticed that she was weak in her lower limbs, and the weakness gradually increased, so that walking became difficult. The reflexes in all the limbs were exaggerated, and the Babinski reflex was obtained. No objective sensory disturbances were found and no pains were felt in the limbs. Muscular atrophy did not develop. The reaction of the irides was sluggish.

Degeneration of the pyramidal tracts was found, extending as high as the pons, but not above. The other tracts of the cord were normal. The cells of the anterior horns of the spinal cord were in part diseased.

Reëxamination of the sections from this case revealed a slight round cell infiltration of the pia of the cervical region, but no thickening of vessels.

A Case of Progressively Developing Paralysis, at First of Hemiplegic Type, from Primary Degeneration of the Pyramidal Tracts[14]

Simpson, a man, aged sixty years, developed gradually hemiplegia of the right side, the lower extremity being weaker than the upper. After several years the left lower extremity also became paralyzed, but not to the same extent as the right. The tendon

[12] Spiller, Robertson and Wadsworth, The University of Pennsylvania Medical Bulletin, June, 1901.

[13] Spiller, Journal of Nervous and Mental Disease, 1902, p. 265.

[14] Mills and Spiller, Journal of Nervous and Mental Disease, 1903, p. 385.

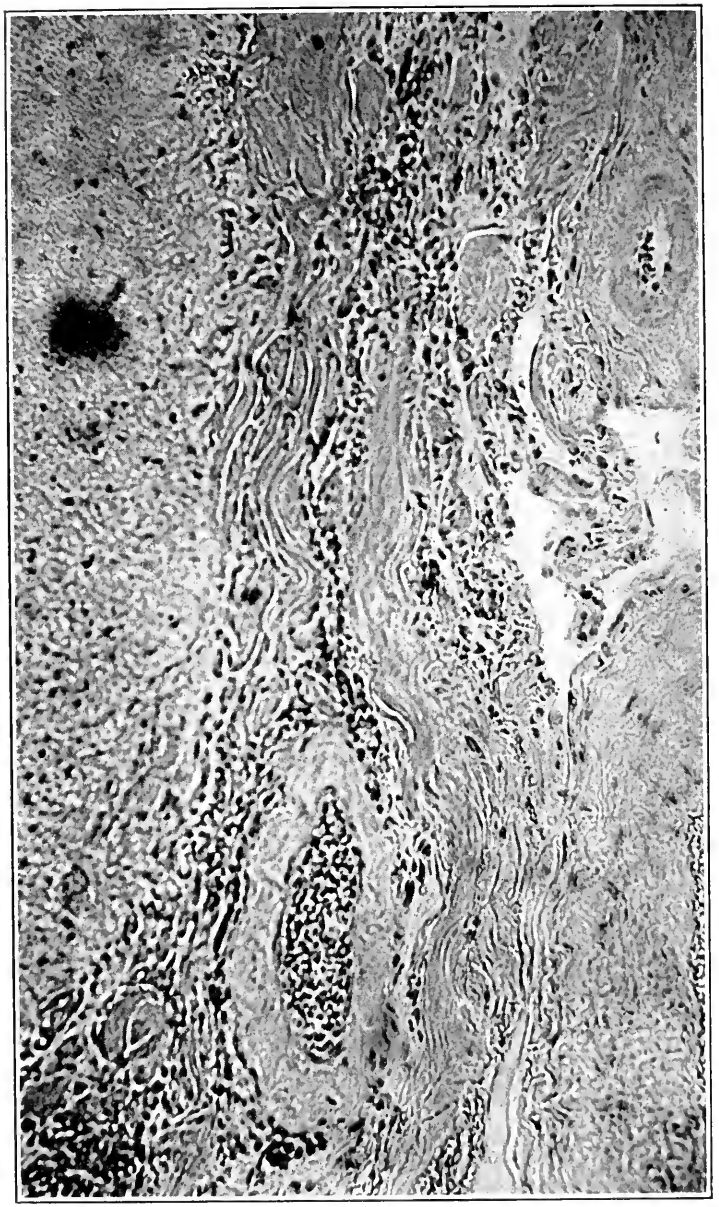


FIG. 7. A Case of Primary Degeneration of the Pyramidal Tracts. Lymphocytic Infiltration of the Pia and Some Thickening of Vessels were Found. (Photograph by Dr. A. J. Smith.)

reflexes were all markedly exaggerated and the Babinski reflex was present. Sensory symptoms were absent.

Microscopical examination showed intense and long-standing degeneration of the right crossed and the left direct pyramidal tracts, the degeneration extending into the pons; comparatively recent degeneration of the left crossed and of the right direct pyramidal tracts, traced by the method of Marchi into the lower part of the right internal capsule. The nerve cells of the anterior horns showed little if any degeneration. The case was one of primary degeneration of the motor tracts. Cellular infiltration of lymphocytic character, of moderate intensity (Fig. 7), was found in the pia about the cerebral peduncles and pons. Some of the vessels were thickened.

A Case with the Symptoms and Findings of Amyotrophic Lateral Sclerosis[15]

Kate D., of middle age, became paralyzed in the right side of the body and face, and within a year also in the left upper and lower limbs, and lost the power to speak. She became greatly emaciated, especially in the muscles of each hand. The thenar eminence was greatly wasted. Fibrillary tremors were present in each upper arm. Spasticity and exaggerated reflexes were found in the upper and lower limbs. The lips were much wasted, and the patient was unable to blow out a lighted match. The tongue was extremely atrophied. The lower limbs were wasted, but not so much as the upper.

The microscopical findings were those of amyotrophic lateral sclerosis, viz., degeneration of the nerve cells of the anterior horns and degeneration of the pyramidal tracts, and of the nerve cells of the hypoglossal nuclei.

Reëxamination of the sections of this case has shown slight round cell infiltration of the spinal pia, especially in the pia of the anterior septum near the base of the septum in the cervical, thoracic and lumbar regions; very little if any implication of the pia about the cervical cord, and no thickening of vessels.

A Case of Spastic Paraplegia from Primary Degeneration of the Pyramidal Tracts[16]

Wm. B., aged forty-two years, had an ulcer near the ankle about four years. Intense spastic paralysis developed slowly in the lower limbs without pain and without atrophy, but contractures and Babinski's sign were present. Sensations for touch and pain were normal in the lower limbs. The upper limbs were almost normal.

[15] Spiller, University of Pennsylvania Medical Bulletin, Jan. and Feb., 1905.

[16] Spiller, University of Pennsylvania Medical Bulletin, Jan. and Feb., 1905.

The findings were those of primary degeneration of the pyramidal tracts. The nerve cells of the anterior horns were very little if at all altered.

Reëxamination of the slides has shown very slight round cell infiltration of the spinal pia in the cervical and lumbar regions, and no thickening of vessels.

A Case of Progressively Developing Paralysis from Primary Degeneration of the Motor System[17]

Julia S., a woman forty-eight years of age, gradually became paralyzed in the right lower limb, and after a year in the right upper limb. Then the left lower limb became weak, and speech became affected. She had no pain. The paralysis of all the limbs was spastic in type and the reflexes were exaggerated. The muscles of the right hand were atrophied.

The findings were degeneration of the crossed pyramidal tracts, especially of the left, and some degeneration of the cells of the anterior horns.

Reëxamination has shown slight round cell infiltration of the pia in the cervical and lumbar regions, without thickening of vessels.

A Case of Progressive Spinal Muscular Atrophy[18]

A man, aged thirty-seven years, probably syphilitic, developed suddenly paralysis of the group of muscles innervated by the left peroneal nerve; complete loss of faradic irritability occurred in a week, and this loss was followed by rapid wasting and slight diminution in size of the entire leg; the deep reflexes were preserved and even increased, but not excessively. The symptoms were confined to the left lower extremity and were without change during three months; no fibrillary tremors, sensory disturbance, weakness of the hands, nor cranial nerve symptoms developed at this time. One year later there were slight general emaciation, complete wasting of the thenar and hypothenar eminences, and, to a less extent, of the interosseous muscles; atrophy and paresis of the tongue and pharynx, fibrillation throughout the body, including the tongue, and still moderate exaggeration of tendon reflexes. There were no marked electrical changes, except in extremely wasted muscles, and no bladder, bowel, nor sensory disturbances.

The important lesions were disappearance of many of the nerve cells of the anterior horns of the spinal cord and of cells of the motor cranial nerves in the medulla oblongata, degeneration of the anterior roots of the lumbar and sacral regions (cervical region

[17] Spiller, University of Pennsylvania Medical Bulletin, Jan. and Feb., 1905.

[18] Moleen and Spiller, American Journal of the Medical Sciences, Dec., 1905.

could not be determined), and of the motor nerves of the medulla oblongata, and numerous small hemorrhages in the gray matter, especially in that of the spinal cord, and in the spinal pia. A distinct but not intense round cell infiltration was found within the pia, even in regions where there were no blood corpuscles. The blood vessels were slightly thickened.

A CASE OF PROGRESSIVE MUSCULAR ATROPHY WITH NECROPSY, PROBABLY SYPHILITIC IN ORIGIN

By S. Leopold[1]

PHILADELPHIA

Confusion has existed in the exact classification of the muscular atrophies ever since Aran and Duchenne first called attention to them under the syndrome of progressive muscular atrophy; and even today this confusion exists and has been increased by the addition of such types as the amyotonia congenita and the Werdnig-Hoffmann form.

An excellent discussion of this subject may be found in Dr. Spiller's recent article in Osler's System, so that it is needless to dwell upon it here. Suffice it to say the sharp distinctions between the various forms has been modified. Chronic anterior poliomyelitis and progressive spinal muscular atrophy are used synonymously by many. The question of the distribution of the atrophy in these two diseases, or the fact that the atrophy precedes or follows the paralysis, has little import.

For the most part the constant pathological feature in these two types has been the disappearance or atrophy of the anterior horn cells. The changes in the white matter have been considered secondary. Degenerations have been noted in the anterior roots and in the muscles. The study of the meninges and blood vessels has yielded little of value. The etiology is still uncertain.

The case that I report is important in that it represents a transitional stage between the progressive muscular atrophy and amyotrophic lateral sclerosis, and also because it presents evidence of syphilis. Clinically, it showed the picture of progressive spinal muscular atrophy, while pathologically the lesions were those of amyotrophic lateral sclerosis in a very mild form.

H. R., aged 50, a baker by occupation, noticed in 1906 that he had some difficulty in opening the lid of his watch. This weak-

[1] From the Department of Neurology and the Laboratory of Neuropathology of the University of Pennsylvania. I wish to thank Dr. Spiller for the privilege of reporting this case and for his kind aid and criticism.

ness of the fingers and thumb began in the left hand and one and one half years later involved the right hand.

Family History.—He thinks his mother had the same disease. One brother and two sisters are living and well. His wife has four children. She had one miscarriage four years ago which was self-induced.

Social History.—The patient smoked excessively; had never used alcohol to excess. He denies all venereal infection. No history of trauma is obtained. He had typhoid fever nineteen years ago. He had blood-poisoning two years before onset of his present trouble. Duration of his present condition has been three years. At the present time, February 1, 1909, he complains of weakness and inability to use the arms and hands, with some weakness in his left leg. He has no pain in any portion of his body. He does not suffer from bladder or rectal trouble. Heart, lungs and other viscera apparently are normal.

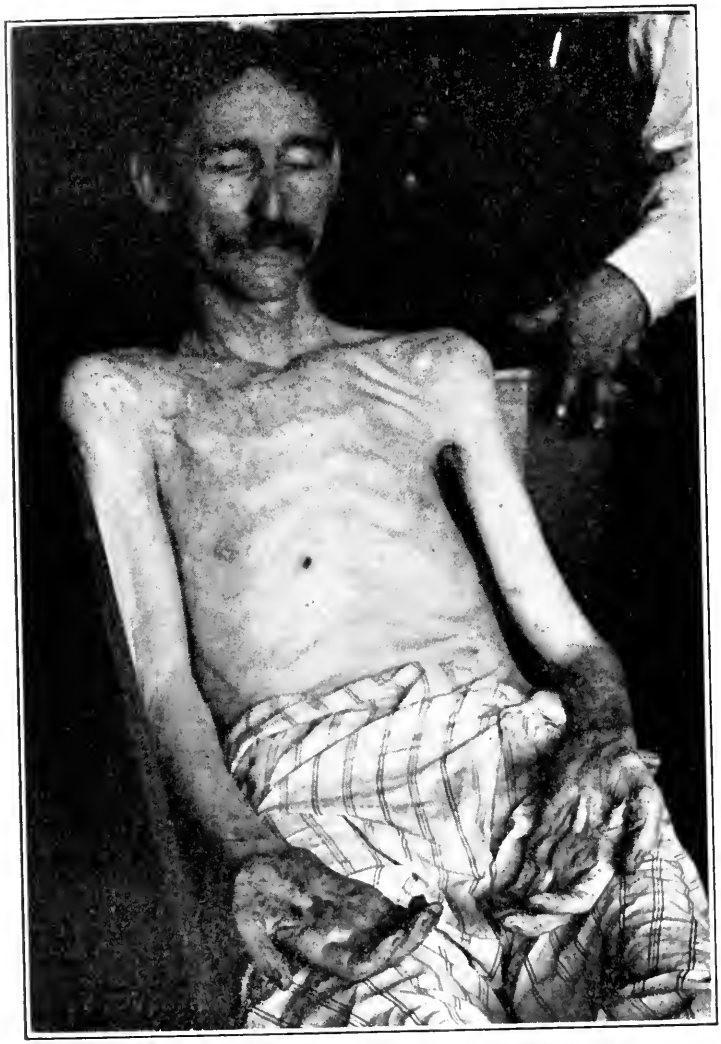
Neurological Examination.—The pupils are equal; they react to light and in accommodation. There is no disturbance of the ocular muscles. The man wrinkles the forehead equally well on both sides and draws up the corners of the mouth on both sides. The tongue protrudes in the median line; fibrillary tremors are present. Speech is somewhat thick. The patient states that at times he almost chokes while eating, and that when he yawns a cramp is felt in the throat. Sensations to pain, temperature and touch are normal in the face.

Examination of the chest shows wasting of the muscles anteriorly and posteriorly, and marked fibrillary tremors are seen in all the muscles. The hands, arms and shoulder girdle show a similar wasting of the muscles. Fibrillary tremors are also present. The biceps tendon reflex is absent on both sides. The triceps tendon reflex is present on both sides. Tactile, pain and temperature sensations are preserved on both sides. The grasp is weak in each hand; he can elevate each arm slowly but fairly well. The thenar and hypothenar eminences have disappeared in each hand, and the well recognized conformity of the praying hand of German writers is noted.

The patellar tendon reflexes are not increased; if anything they are somewhat diminished. The Achilles tendon reflex is normal. Babinski's sign is absent on each side. No ankle clonus, and no spasticity are to be noted. Pain, temperature and tactile sensations are preserved in the lower extremities. He has some power in the muscles of the lower extremities.

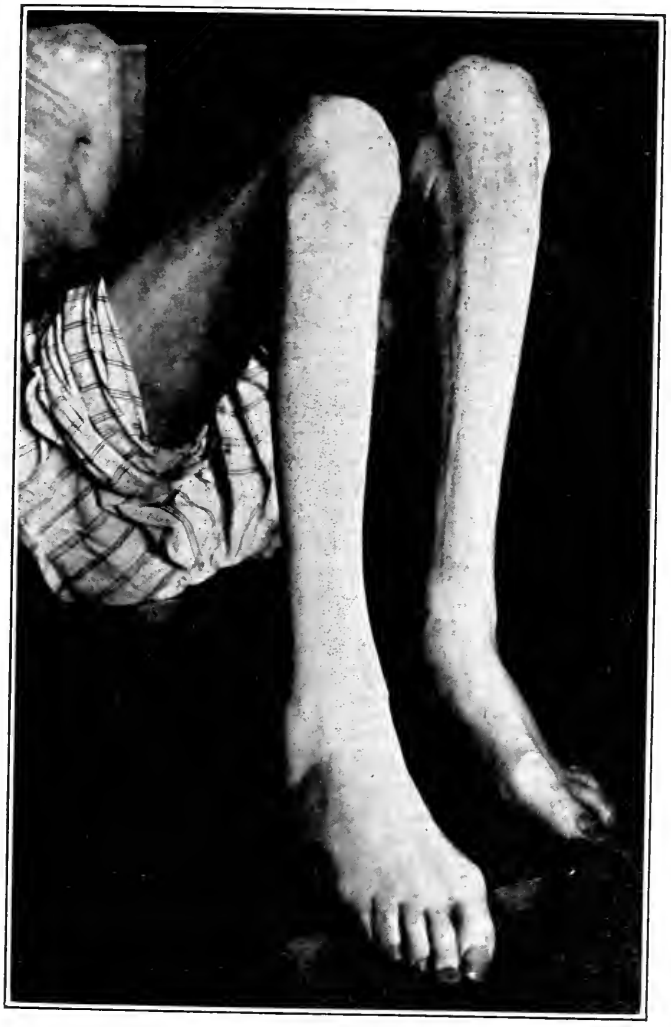
Electrical Examination.—The thenar eminences give no response either to the faradic or the galvanic current. The hypothenar eminences give some response to both currents, but reactions of degeneration are obtained. The muscles of the forearms, arms and shoulders show response to both currents, normally quick and unchanged as to quantity or quality.

The following notes were taken during several examinations covering a period of three months until his death in May, 1910: The man has no disturbances of sensation in any portion of the



body. The atrophy of the tongue has become more marked. The speech is bulbar in type. The atrophy of the hands and forearms has progressed, and is more marked on the right side. The arms and shoulders show atrophy but to a less degree than do the hands

and forearms. He can flex the fingers of each hand, but cannot extend them. The supinators are still active on each side. The atrophy in both legs is considerable. He cannot raise the foot



when the heel is kept on the ground. The gait is steppage. The tendon reflexes in the upper extremities are lost. In the lower extremities the Achilles tendon reflex is still normal, and the patellar tendon reflex is obtainable on both sides. No spasticity

is present in either extremity. Ankle clonus and the Babinski sign are absent on each side.

Patient has become quite emotional, alternately laughing and crying at times. During the last month had several severe choking attacks, with paroxysms of coughing.

On the afternoon of May 6, 1910, a decided change took place in his condition, the pulse rate increased to 120, the respiration to 36. There were marked dyspnea and orthopnea. The patient was conscious until three hours before his death, when he lapsed into a stupor, with Cheyne-Stokes respiration.

Necropsy was performed two hours after death; only the brain and spinal cord were removed. No gross changes were noted either in the membranes or on the surface of the brain.

Summary.—Male, aged 50, with doubtful heredity, but with a history of exposure to extreme heat, developed a gradual weakness and wasting in the muscles of the left hand and arm. One and one half years later the other extremity became involved, and a year later the lower extremities became affected. The disease extended over four years. Bulbar symptoms developed during the last six months. Besides the atrophy there were noted fibrillary tremors, reactions of degeneration, preservation of all forms of sensation; absence of spasticity, ankle clonus or Babinski's sign, and no sphincter disturbances. Emotional disturbance developed in the latter part of the disease.

Patellar tendon reflexes were preserved but not increased. The biceps tendon reflexes were absent but the triceps tendon reflexes were preserved on both sides.

Microscopical Examination.—Sections were taken from the lumbar, thoracic and cervical segments of the cord, from the medulla oblongata, pons and paracentral regions. They were stained by the methods of Weigert, Marchi, Nissl and by hemalum and eosin. Some sections of the cord at the various levels were stained by the Bielchowsky method.

Marchi and Weigert Hematoxylin Methods.—Distinct degeneration and sclerosis are noted in the lateral columns in all the levels of the cord, and are especially marked in the lumbar and cervical regions. Both sides are about equally affected and with the Weigert stain the alteration can be detected with the unaided eye. While not so intense as in some cases of amyotrophic lateral sclerosis, it is sufficiently marked to present the appearance of a lateral sclerosis. This sclerosis is systemic in character. The anterior roots show a similar sclerosis.

Nissl Stain.—The various levels show intense involvement of the ganglion cells in the anterior horns. There is marked reduction in number; in some of the sections only three or four cells are seen. Many of the remaining cells show intense chromatolysis and pigmentation and are considerably atrophied. In many cells the form is distorted and the nucleus is displaced or has disap-

peared. In the cervical levels the picture is more intense. In the medulla oblongata the ganglion cells of the hypoglossal nucleus show a similar picture.

Hemalum and Eosin.—In the various levels the sections show a very slight thickening of the meninges, not sufficient to be considered pathological. The same mild sclerosis is seen in the walls of the vessels. The bloodvessels are congested throughout, especially in the cervical level. There is some perivascular edema, and around some of the vessels a moderate round cell infiltration is noted. It is probably indicative of syphilis. Glial proliferation is noted in the crossed pyramidal areas.

The paracentral lobules, medulla oblongata, pons, and optic chiasm show no changes in their meninges. The bloodvessels show the usual amount of congestion. The Betz cells show some atrophy and degeneration.

A summary of the microscopical findings is a marked atrophy and loss of the ganglion cells in the anterior horns, with moderate distinct sclerosis of the crossed pyramidal tracts; moderate sclerosis of the vessels of the spinal pia with moderate lymphocytic perivascular infiltration.

While the patellar tendon reflex in this case was distinct, it was never exaggerated and at no time could spasticity or the Babinski sign be elicited. Several observers have reported cases with the preservation or even slight increase of the tendon reflexes, and the question naturally has arisen are these cases of amyotrophic lateral sclerosis. Oppenheim does not regard exaggeration of the tendon reflexes as sufficient evidence to make a case of progressive muscular atrophy one of amyotrophic lateral sclerosis, because a slight increase could be due to neurasthenia, while Dana considers it unnecessary confusion of symptomatology to transfer the diagnosis even if there arise a little spasticity; he limits the term amyotrophic lateral sclerosis to those cases which only from the beginning and dominantly show the spastic and contracting type of muscular atrophy. While most observers today consider chronic anterior poliomyelitis and progressive spinal muscular atrophy as synonymous terms, and separate the amyotrophic lateral sclerosis, others (Marie, Gowers) would group them all under the same heading. This difference in opinion may be attributed to the point of view. Some emphasize the clinical and others the pathological features. Those who have emphasized the clinical picture see many varieties. As early as 1888 Nonne separated three varieties of chronic anterior poliomyelitis, and Raymond and Cestan in 1905 gave clinical dignity to four varieties of

amyotrophic lateral sclerosis. It is doubtful if such refinement of diagnosis or classification is essential. Considered pathologically, the chief distinction between the two diseases revolves around the implication of the crossed pyramidal tracts. In some cases, as in mine, this characteristic feature loses some of its distinctness. Some portion of the white matter has been found degenerated in nearly all the cases reported, but that portion has usually been the anterolateral ground bundle, and should not be confounded with the degeneration found in the crossed pyramidal tracts. Dejerine reports two cases in which no portion of the white matter showed any change.

In nearly all the cases the anterolateral ground bundle showed degeneration in more or less intensity, viz., in Dubil-Charcot's, Strümpell's, Oppenheim's, Moleen and Spiller's, Cassirer and Maas, etc.

The changes in the crossed pyramidal tract were noted by the Marchi method in some of the cases, viz., those of Bielchowsky, Moleen and Spiller, Aoyama, Grunow, and others.

"It is questionable," says Spiller, "whether these cases should be classified as progressive muscular atrophy or amyotrophic lateral sclerosis." He would rather consider them as progressive muscular atrophy, but as marking a transitional stage to amyotrophic lateral sclerosis.

Few cases show the sclerosis of the crossed pyramidal tract so distinctly as does the case reported, so that with the Weigert stain it may be recognized with the unaided eye. In Hammond's case the posterior columns were normal, the direct and crossed pyramidal tracts and Gowers' tract were degenerated. Several observers consider the case as one of combined sclerosis.

Dreschfield's case also showed marked atrophy of the crossed pyramidal fibers, but mostly in the cervical region. In Pal's case a distinct history of syphilis was noted. Grunow's case showed isolated sclerotic areas in the crossed pyramidal tracts.

Sainton reports a case as follows: The patient aged 32, with a history of syphilis; the atrophy commenced in the upper extremities, finally involving the legs and feet. At necropsy the columns of Goll and Burdach showed marked sclerosis. The anterior horn cells were degenerated and there was slight sclerosis of the direct and crossed pyramidal tracts.

Raymond and Riklin in 1900 reported several transitional

forms. Other cases are on record in which degeneration has been noted in the Goll and Burdach columns, and in the direct pyramidal tract.

Of unusual interest is the case reported by Vix. The onset was sudden with cramp-like seizures in the left arm and loss of power in the fourth and fifth fingers. Two years later atrophy was noted in that hand. The right hand became involved in the same manner the following year. Ten years after the patient presented the complete clinical picture of a progressive muscular atrophy.

The pathological changes showed a chronic fibrous thickening of the pia with round-cell infiltration, especially in the anterior portion of the cord, and most intense in the cervical region. The pial septa and larger vessels of the cord and medulla oblongata showed round-cell infiltration. This chronic meningitis caught the anterior spinal roots and the anterior horn cells were atrophied. The white matter was degenerated in the posterior columns and along the entire periphery. Fresh degeneration by Marchi was noted in one of the crossed pyramidal tracts in the cervical region. The case was one of syphilitic meningo-myelitis. He quotes a case of Oppenheimer in which the clinical and pathological pictures were similar to those in his case.

It is probable from the pathological changes in my case that syphilis existed. The pia and bloodvessels were slightly thickened, and some of the bloodvessels showed a slight round-cell infiltration. A round-cell infiltration also was found in the spinal pia.

Raymond as early as 1893 pointed out the relation of syphilis to amyotrophic lateral sclerosis, and recently Hoffmann, Leri, and Dana have emphasized this. Leri collected 30 cases of progressive muscular atrophy in which syphilis was the cause; Dana, in 72 cases found 25 per cent. gave a history of syphilis. Lannois reports a clinical case of progressive muscular atrophy which showed marked improvement under treatment. Leri cites a case of amyotrophic lateral sclerosis cured by antisyphilitic treatment. Other cases have been reported by Van Gehuchten, Dana, Merle, Sainton, Pal, and Williamson.

In the records[2] given to me of 13 cases of progressive spinal

[2] I wish to thank Dr. E. Corson White for the courtesy in placing these records at my disposal.

muscular atrophy and amyotrophic lateral sclerosis in which the Wassermann reaction was made, two gave a positive reaction.

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Society Proceedings

PHILADELPHIA NEUROLOGICAL SOCIETY

MARCH 23, 1912

The President, DR. JOHN H. W. RHEIN, in the Chair

Dr. J. C. Knipe (by invitation) and Dr. Samuel Leopold presented a case of dyspituitarism with interesting eye symptoms.

Dr. J. H. W. Rhein presented a case of complete bilateral hemianopsia.

The two cases presented above were discussed jointly. Dr. George E. Price said that the occurrence of convulsions in the case shown by Dr. Rhein recalled a paper read recently by Dr. Dercum in which were presented a series of x-ray plates from cases of epilepsy showing changes in the sella turcica.

Dr. Alfred Gordon asked in what condition the genitalia were. Were they atrophied or otherwise defective? The case suggested Froehlich's type or the so-called adiposo-genital syndrome as described by French authors. Dr. Gordon said he asked the question because he had a number of cases under observation.

Dr. W. W. Hawk asked whether there were any mental symptoms in Dr. Leopold's case. The patient had hippus and contracted fields and no reflex changes, he thought of the possibility of the case being an early case of dementia præcox. He had seen similar conditions in many cases of dementia præcox.

Dr. Spiller referred to a case that had been reported by the late Dr. Frederick Packard about 1890. The brain came into Dr. Spiller's possession through Dr. Cattell. There had been decrease in the hemianopsia after a period of about five years. Dr. Spiller regarded this as caused by enlargement of the sella turcica and diminution of pressure on the optic chiasm. He thought binasal hemianopsia might be caused in cases of tumor of the pituitary body by pressure of the outer part of each optic nerve against the outer wall of each optic foramen.

Dr. H. Maxwell Langdon said Dr. Spiller's suggestion as to the possible means of production of the binasal hemianopsia from tumor of the pituitary body is similar to that offered by some writers as the reason for the bitemporal hemianopsia seen in acromegaly, namely encroachment on the optic foramen by the enlarged wing of the sphenoid bone.

Dr. A. A. Eshner said that while Dr. Leopold had described the case in considerable detail he had failed to hear any reference to the therapeutic measures that had been employed to bring about the good result reported.

Dr. Leopold said he had an x-ray plate taken of the base of the brain which did not show as clearly as he would like. In regard to Dr. Hawk's query as to whether the boy showed any mental symptoms: he was a Girard College boy, and worked regularly in a drug store. Dr. Leopold

examined him in regard to his mentality and found it very good. His genitalia seemed to be well developed; from what he told Dr. Leopold he had had no sexual desires although he is 18 years of age. The therapy in this case had been potassium iodide, 5 grains three times a day and then increased to 10 grains. Whether the improvement is only temporary, Dr. Leopold said he did not know. A Wassermann test had been made and was negative. As he mentioned before, this case will need examination constantly through the next few years, for the development of more serious trouble.

Dr. Knipe said in regard to Dr. Spiller's statement about the optic foramina being pressed on, that one of the cases reported by Dr. Shoemaker was supposed to be due to pressure on the optic foramina. In regard to the treatment, he did not think that the boy received potassium iodide until his neuritis showed signs of improving.

Dr. John H. W. Rhein said, in regard to Dr. Gordon's query, that there was some diminution in the patient's sexual power in the last few months but that his sexual organs had not atrophied.

PROGRESSIVE MUSCULAR ATROPHY WITH UNUSUAL SYMPTOMS

By Alfred Gordon, M.D.

A woman of middle age developed twelve years ago a gradually oncoming wasting of the small muscles of both hands. Her attention was first attracted to it by a difficulty of threading, of buttoning or unbuttoning her clothes. Five years ago she observed a difficulty of walking and emaciation of the face.

At present there is a distinct muscular atrophy of Aran-Duchenne type. The interrossei and other small muscles of the hands are atrophied. The wasting has spread to the arms and shoulder muscles. Her face is very thin, and fibrillary tremors are seen in the arms; some individual muscles are sunken. The patient complains of some difficulty of mastication, the food remains in her mouth a long time, or else she swallows it unmasticated. Fibrillary tremor is observed in the tongue.

The unusual feature in the case is the total loss of patellar tendon reflexes, contrary to what it is frequently observed in myelopathy of long standing. As a rule amyotrophic lateral sclerosis is frequently the eventual outcome of myelopathy and the tendon reflexes are then found increased. The patient also presents a bilateral foot drop and high steppage gait, such as is observed in multiple neuritis. If the loss of knee-jerks depended upon the chronic anterior poliomyelitis, we should have expected to find here such a pronounced atrophy of quadriceps femoris, as to produce complete disability. The patient, however, walks without support. One pathological condition could therefore not explain the clinical picture of the case.

The muscles of the hands present distinct reaction of degeneration, but a marked diminution of galvanic response is observed in all other atrophied muscles.

Dr. George E. Price said he saw no reason why the changes in the anterior horn cells could not account for the symptoms presented by Dr. Gordon's case.

Dr. Alfred Gordon said that as far as Dr. Price's remarks were con-

cerned the condition has been in existence so long that if we wish to explain it on the basis of anterior poliomyelitis the patient by this time would be totally paralyzed. It is a chronic condition and has lasted for many years. The puzzling thing is to find one pathological condition which could explain all manifestations in this case, such as the foot drop. The foot drop is so typical of multiple neuritis.

Dr. Spiller said that bilateral peroneal palsy had been observed by a number of writers in chronic anterior poliomyelitis, and was present in the case with necropsy reported by Dr. Moleen and himself. He would feel loath to accept the diagnosis of two distinct processes in the case presented by Dr. Gordon, one of which was multiple neuritis.

Dr. Gordon stated there was no family history of similar disease in his case and the Wassermann test was strongly positive.

Dr. Lloyd said that the case might possibly be regarded as belonging to the group of neuritic atrophies, somewhat like the cases described as the Charcot-Marie-Tooth type. In these cases there is a primary lesion in the peripheral nerves, and the muscular atrophy is secondary. These cases may be familial, and may also occur after the infectious diseases. Foot-drop is a common symptom, but Dr. Lloyd did not recall that any such cases had been reported in which the muscles of the face were involved. He had had at Blockley a case of this form of neuritic atrophy, which was familial, the patient having had a brother similarly affected.

A CASE OF BRAIN TUMOR IN THE PARIETAL REGION, ASSOCIATED WITH LARGE CYSTIC FORMATION

By J. Hendrie Lloyd, M.D.

A. K., male, white, aged 16 years. Admitted to the M. E. Hospital on April 6, 1911, by request of Dr. Higbee. The illness began eight weeks before. The first thing noted was double vision for which the eyes were tested, and glasses fitted. At the time there was severe pain in the right eye, above the eye and back along the right side of the head. The patient began to have paroxysmal attacks of pain, which lasted from a few hours to half a day, and occurred about every ten days. During these attacks there was blurring of vision, and the mother said that the right eye apparently bulged. In the attacks there was also vomiting irrespective of the taking of food. The resemblance of these seizures to migraine is to be noted. Before his coming to the hospital the attacks had increased in frequency and severity, and were longer in duration. Finally the patient would lose consciousness during the paroxysm. There was never any convulsion. An attack four days before admission to the hospital lasted 30 hours, during which time the patient was unconscious. By this time he was never free from pain when aroused. On admission his expression was staring, and he was partly blind; the right side of the brow seemed fuller than the left, the right eye protruded somewhat, and the right upper lid was paretic. The pupils were dilated and unequal, the right being the larger. There was no pain on tapping the head, but there was pain on pressure on the right eyeball. There was no third nerve paralysis. The tongue was protruded in the middle line. There was no paralysis of the limbs, nor any change in gait, station or coördination. Satisfactory sensory tests could not be made.

Dr. Moore reported that the pupils reacted to light and on accommodation, and that the ocular muscles were normal. In the right eye the nerve-head was swollen, cup was obliterated, veins were very full and tortuous, and the arteries reduced in calibre. There were numerous gray patches in the retina, with marked cloudiness, and here and there small points of hemorrhage. The left eye was in practically the same condition but in less marked degree. It is thus seen that the papillary edema was greater on the side of the tumor. The fields were not taken.

A diagnosis of brain tumor was promptly made, but the location of the growth was not entirely clear. The absence of motor symptoms was so complete that the motor region could be ruled out. Unfortunately Dr. Lloyd could not avail himself of sensory tests because of the boy's mental condition. They would probably have shown astereognosis, considering where the tumor was found post mortem. Pain was so severe and localized in the right side of the head that it gave the best indication, but Dr. Lloyd was inclined, because of the bulging of the eye, to locate the growth farther forward than it proved eventually to be.

Dr. Lloyd proposed, and urged operation, explaining its necessity, and pointing out that it was the only chance, but the mother was obdurate and would not permit it. Five days after his admission she removed the boy from the hospital, and Dr. Lloyd saw him but once later, at his home, by courtesy of Dr. Higbee. The course of the disease was very rapid. The patient suffered atrocious pain; and lay for long periods in a state of stupor, or semi-coma. A few weeks later, in May, he died in one of these attacks. The whole duration of the disease was a little over three months.

The tumor is located just behind the fissure of Rolando. It is very superficial and associated here with a large cavity or cystic formation. It it a great pity that the patient was not operated on. The tumor lies almost immediately under the cortex and in the early stage it could have been operated on without difficulty. The case affords an interesting confirmation of the theory that the motor centers are entirely anterior to the Rolandic fissure. The boy never had any motor symptoms in the way of paralysis or convulsions. The formation of such a large cyst in connection with tumors of this kind is not common.

Dr. Charles K. Mills said the case was a little unusual in its nature and in its isolation. The tumor might have been readily removed by operation. The case was especially interesting to Dr. Mills with his views of the position of the motor zone, because of the post-Rolandic situation of the tumor. The symptoms in Dr. Lloyd's case were not motor.

Cysts in association with tumors are not uncommon. In one case which Dr. Mills reported some years ago, a cyst almost like a purse was found on the edge of an endothelioma. Sometimes these cysts are formed by the partial breaking down of the growths but they are not always of this character.

Dr. Mills said he had no doubt if Dr. Lloyd could have examined for different varieties of sensation, for astereognosis, etc., some of these sensory impairments would probably have been found.

Dr. J. Hendrie Lloyd said there was not much more to say. In response to what Dr. Mills had said he thought he had spoken of astereognosis in such a condition as was presented by this case. One of the most interesting features from a physiological standpoint was the fact that the boy had had no motor symptoms. This seems extraordinary when we think of the amount of pressure and the disturbance of function which

would seem likely even though the motor area was not positively involved. As already said, it was a confirmation of the doctrine that the motor centers are located in front of the fissure of Rolando.

NEW YORK NEUROLOGICAL SOCIETY

MAY 7, 1912

The President, DR. L. PIERCE CLARK, in the Chair

A CASE OF GENERAL PARALYSIS OR CEREBRAL SYPHILIS (ENDARTERIC FORM)

By M. S. Gregory, M.D., and M. J. Karpas, M.D.

The patient was a girl, eight years old, who was transferred from the children's ward to the psychopathic pavilion of Bellevue Hospital on April 24, 1912. The child's parents were first cousins, and one paternal grand-uncle was insane in the senile period. The mother, at the age of 18, contracted syphilis, for which she received treatment six weeks. At the age of 26 she gave birth to the child now under discussion.

The patient was the first of four children. She was born in New York City, March 23, 1904. At the age of six weeks she was treated for syphilis by Dr. William Hirsch: she remained under his observation for about six months, at the end of which time her general condition was excellent. At that time the child weighed 17 pounds; the skin was of good color, without eruption or scar, and there were apparently no residua of the disease. She subsequently had measles and scarlet fever without serious complications or sequelæ. At the age of five years she lost the power of walking for two months, and was treated at the Cornell Medical School Dispensary. Since then her gait had been somewhat affected. She had always been considered a delicate child, rather cranky and irritable. Her memory was good, but she was fond of fabricating. There was no history of convulsions, fainting attacks or headaches. Since childhood she had suffered from enuresis. On April 16, 1912, she was admitted to the children's ward of Bellevue Hospital, suffering from vomiting and pain in the right side of the thorax.

When the patient was transferred to the psychopathic ward she was fairly well nourished. No Hutchinson's teeth. The pupils were irregular in outline and unequal, the right being a trifle larger than the left. They failed to react to light or accommodation. The optic discs were normal, and there was no paralysis of the ocular muscles. The other cranial nerves were intact. There was no paralysis of the upper or lower extremities; knee and Achilles jerks were absent. Hypotonus fairly well marked. Station was good, but the gait was of a rather shuffling character. There were no tremors nor speech defect. The Wassermann test in the blood and fluid was strongly positive, and in this connection it was interesting to note that the Wassermann in the father was strongly positive and in the mother it was negative. The blood in one of the patient's sisters was also negative.

Mentally, the patient was restless and very childish, talking in a silly manner and indulging in foolish fabrications. It was difficult to engage

her in conversation or secure her attention. When questioned, she would become irritated, and her answers were not always to the point. She could only name two colors correctly—black and white. On account of her marked attention disorder, it was impossible to test her retention or memory, or subject her to the Binet-Simon test. Attempts were made to teach her to spell "cat" and other simple words, but they were unsuccessful.

The diagnosis in this case, the authors said, lay between juvenile general paresis and the endarteric form of cerebral syphilis. The marked physical signs, associated with the laboratory tests, spoke in favor of paresis. While the mental picture was atypical, this was true of all cases of juvenile general paralysis. Moreover, it must be borne in mind that the case was still in the incipient stage.

Dr. L. Pierce Clark said the diagnosis in the case shown by Drs. Gregory and Karpas had to be made with reservation at such an early age. In Vienna, a case of general paralysis had been reported in a child of nine years and in another of seven. In children, the absence of a careful mental analysis made the diagnosis very difficult indeed, although in this case the undoubted presence of inherited syphilis had great weight in the tentative diagnosis of general paralysis in the preparetic stage. Dr. Clark said that in his service at Randall's Island he had seen quite a number of cases of inherited syphilis among the imbecile children, and in some of these there was a distinct mental defect. At the same time, he did not care to venture a diagnosis of general paralysis in a case of this kind without a very fair picture of the mental side in addition to the specific reaction in the fluids.

LESION (SOLITARY TUBERCLE ?) OF RIGHT CRUS CEREBRI

By F. Kennedy, M.D.

The speaker presented a boy, sixteen years old, a Hebrew, who was first seen by him on April 15, 1912. The chief complaint was weakness and shaking of the left hand. The boy had always been clever at school; about a year ago it was noticed that his left hand trembled and that he was awkward in using it. No trembling was noticed during sleep, but any voluntary effort of the left hand was accompanied by marked tremor, which became more aggravated the more he attempted to control it. He experienced great difficulty in holding objects in the left hand, and complained of a shaking sensation in the inner aspect of both legs. He also spoke of weakness of the left upper and lower extremities. His symptoms had been slowly progressive. On examination, it was observed that the right palpebral fissure was smaller than the left, owing to definite ptosis of the right eyelid. The right pupil was larger than the left; it was irregular in outline, slightly ectopic, and reacted very poorly to light and on convergence. Movement of the right eyeball was markedly limited upward, inward and downward. There was no abnormality of the left eye. The optic disks were normal. There was weakness of the left facial muscles of the supranuclear type: also weakness of the left arm and leg. There was a slow, rhythmical, coarse tremor of the left hand and arm, and to a lesser degree of the left leg. The deep reflexes on the left side were greater than those on the right. An exhaustible ankle-clonus existed on the left, but not on the

right side. The plantar reflex on the left side was of the extensor, while that on the right side was of the flexor type. There were no sensory changes.

Dr. Clark said he recalled a very similar case in a boy whom he sent to Roosevelt Hospital, where the case subsequently came to autopsy. In that case, the possibility of a solitary tubercle was thought of, but the late Dr. Hodenpyl maintained that such a diagnosis was hardly tenable, even at the autopsy, in view of the fact that there were no evidences of tuberculosis elsewhere in the body. Later, on microscopical analysis, he came to the conclusion that it was a solitary tubercle. That case was seen before the time that the tuberculous reactions were so well known or distinctive.

CHRONIC OPHTHALMOPLEGIA EXTERNA

By I. Abrahamson, M.D.

A woman, 54 years old, whose family history was unimportant, was the mother of nine children, five living and four dead; she had also had two miscarriages. She was not addicted to the use of alcohol, there was no syphilitic infection; no history of lead, ptomaine or other poisoning.

For the past twenty-two years the patient had suffered from headaches, which she attributed originally to a fright sustained during a puerperium. Nine years ago she awoke one morning with ptosis of the left eye. The headaches had gradually become more severe and frequent; at first, they were associated with nausea and vomiting, but since the onset of the eye palsy they were associated with slight vertigo, mental confusion, tinnitus and pain on the corresponding side of the face.

With the onset of the ptosis, the patient complained of feeling weak all over, although she was able to be about. The diplopic images were seen one above the other. The patient was put on potassium iodide, which was increased, with intervals, up to 100 drops three times daily, and in the course of three months she had entirely recovered. She remained well for two years. Then she again began to complain of insomnia at night, with sleepiness by day, headaches, mental confusion, vertigo, and shortly afterwards she developed a ptosis of the right eye, with diplopia. Her symptoms again disappeared under treatment, only to be followed, in the course of a year, by a left ptosis, without diplopia, and since that time she had had repeated remissions and exacerbations. Her examination otherwise showed ophthalmoplegia externa, almost total, a slight movement in all directions being preserved; facial supply and rest of body normal. Dr. Abrahamson was cognizant that idiopathic chronic ophthalmoplegias were very rare, and that most cases reported later developed into tabes, multiple sclerosis or other more widespread processes, but he still believed that in view of the long duration of this case, 9 years, and the absence of all other symptoms during this extended period, the case was one of true chronic progressive ophthalmoplegia.

VASCULAR LESION IN THE RIGHT CRUS, IMPLICATING THE RED NUCLEUS

By E. G. Zabriskie, M.D.

A man, 35 years old, unmarried, an elevator operator, for four months prior to the onset of his trouble had been drinking heavily, being intoxicated most of the time. During that time he had received a blow over the left eye by a moving car, and had remained unconscious for an hour or two. Six weeks prior to coming under observation he had been found lying half out of bed, with his head on the floor: he was confused, but was able to get back into bed unassisted. Both his eyelids drooped; he complained of blurred vision and thought he was blind. Three weeks later his left arm began to shake; he complained of numbness in the tips of the fingers of the right hand, and formication about the right elbow and knee joints. He had difficulty in moving the eyes, and occasional difficulty in swallowing saliva; never of food. He had attacks of spasmodic laughter, and occasionally flung his arms and legs about in an uncontrollable manner.

Upon examination, there was complete right ptosis, with paralysis of the right internal, superior and inferior recti. There was inability to elevate the eyes. In all other directions the eye movements were normal, and there was considerable nystagmus. The right fundus was normal; the left seemed slightly congested. The right pupil was larger than the left; both were normal in outline. There was absence of light reflex and convergence in the right eye; left normal. There was equal mobility in both arms and legs; the left arm and leg seemed slightly spastic. The reflexes were equal on both sides; the right abdominal reflex was greater than the left. No Babinski; no clonus.

There was a distinct rhythmical, coarse, slight tremor of the left arm, at times involving the head and sometimes the leg; not intentional. Purposeful movements were carried out in a somewhat awkward, ataxic manner. The gait was uncertain, as was the station at times, but there was no true ataxia. There were no objective sensory disturbances. An examination of the cerebrospinal fluid and serum gave negative results.

Dr. Edward D. Fisher recalled a case of an excessive tremor of this kind where a lesion of the crus was found postmortem. That patient, however, did not have the eye symptoms which were present in the boy shown by Dr. Zabriskie, which could perhaps be explained by the proximity of the lesion in this case to the third nerve region.

Dr. Abrahamson said that to him the case looked like one of multiple sclerosis of acute onset. The symptoms indicated multiple lesions rather than a single lesion.

Dr. Clark said he was rather inclined to ascribe the symptoms to a multiple lesion, or possibly a lesion accompanied by a good deal of cerebral change. While many of the symptoms pointed to a crus lesion, there were others, such as the explosive laughter, which indicated a lesion situated much higher than the mid-brain. The tremor seemed to belong to the athetoid type rather than to the intentional.

Dr. Zabriskie, in closing, said the laughter had been of the explosive type, such as one heard in pontine or mid-brain lesions. The tremor of the left hand impressed him as more typical of paralysis agitans; it was distinctly a tremor of repose rather than an intentional tremor. It was coarse and absolutely rhythmical.

A CASE OF TERATOLOGICAL DEFECT (?) OF THE RIGHT CEREBELLUM

By Dr. Zabriskie

A boy, eight years old, who was the second child, was born with instrumental delivery. He had never had any convulsions. He was able to creep, but did not walk until he was two years old, and frequently fell when he started to walk. He went to school when he was seven years old, and learned quickly.

At the present time he had frequent falls when he walked, and sometimes when he stood still, the right knee giving way under him. Any sudden noise or fright caused the knee to give way, and he fell. At times, he complained of dizziness.

Objectively, his face was decidedly asymmetrical, with flattened labionasal folds and the typical shallow adenoid facies. The left arm was smaller than the right, including the hand and fingers. The left half of the trunk was smaller than the right; the right thigh and buttock smaller than the left. The eyelashes and the hair of the head were long and dry, and not particularly coarse. There was no hair under the arms or on the pubes. The gait was shuffling in character; no spasm or incoördination; reflexes normal; no Babinski. The pupils were equal, and there was prompt reaction to light and convergence; no diplopia; fundi normal. Pronounced nystagmus in looking to the right. The hearing of the right ear was diminished to watch and whisper, but the hearing to tone was equal. No evidence of cardiac or other organic lesion.

A lumbar puncture was done, followed by an extremely violent reaction, with vertigo, falling and intense vomiting which lasted a week. There was also an extremely violent reaction to the Baranyi test. The cerebrospinal fluid and the serum tests were negative. Urine, blood, etc, were normal. There were no objective sensory disturbances.

THE OCCURRENCE OF GENERAL PARALYSIS IN WOMEN

By George W. T. Mills, M.D., of the Central Islip State Hospital

For years, he said, it had been stated that general paralysis was much more common in men than in women, the ratio being variously given as from 1 to 4 to 1 to 7, and the per cent. from 3 to 6. Differing from this generally accepted view, the author said it was his contention that general paralysis was nearly, if not equally, as common in women as in men, especially in the city. Most of the work upon which this paper was based was done in the past three years, but the conclusions were drawn from a period of four years, during which time 2,800 women had been admitted, and 639 lumbar punctures done.

If we went back over the annual reports of the New York State Commission in Lunacy, beginning with the fiscal year 1907, we found that the occurrence of general paralysis in women was given as about 6 per cent., and that no change was apparent until the fiscal year 1909–1910, when the figure had risen to 8.4 per cent. In the Central Islip reports, which was the only institution reporting any material increase, we found that for the year ending September 30, 1908, the figure was 6.2 per cent.; for 1909, it was 13.4 per cent.; for 1910 it was 20.4 per cent., and

although the final figure for the last fiscal year was not yet at hand, it would be in the neighborhood of 20 per cent.; *i. e.,* there was a rapid increase over a period of two years, and since then the figure had remained about stationary at 20 per cent.

It had long been accepted as a fact that general paralysis was much more common in cities than in the country districts. At Central Islip the admissions were almost exclusively from New York City; the patients represented the lowest element of city life, and the per cent. of foreign born was very high. When one recalled the important symptoms of general paralysis, we found in prominent positions speech and writing on the physical side, and memory on the mental. One could therefore readily see the difficulties in diagnosis on an admission service showing such a high percentage of foreign born, and including a large number of illiterates. The development of the phychosis was also of great diagnostic value. Many of the patients in their institution were never visited; many had no friends, and it was impossible to obtain a history of the earlier symptoms. Therefore, in the investigations of their cases, they had come to lay great stress upon any neurological sign, upon atypical mental pictures and upon memory defects.

Dr. Mills said the difficulties of diagnosis gradually led to the increased use of lumbar puncture, and the presence of even a few suggestive physical or mental signs became sufficient to justify a puncture. Lately, of course, the Wassermann findings had been given their place in the complex. It was not until 1908 that lumbar puncture was taken up to any degree in their institution. During that year there were, on the female reception service, about 30 punctures, with 6 per cent. of paresis; in 1909 there were 95 punctures, with 13 per cent. of paresis; in 1910 there were 181 punctures, with 20 per cent. of paresis, and in 1911 there were 192 punctures, with 20 per cent. of paresis. It was also interesting to note that of 233 clearly positive punctures on which he had Wassermann reports for both blood and spinal fluid, the Wassermann reaction was positive in the blood serum or in the spinal fluid in 204 cases, or 87½ per cent.

Dr. Mills then reported briefly a number of cases to illustrate the fact that any form of mental complex could be present in general paralysis. In closing, he said it might appear to some that he had laid too much stress upon lumbar puncture, but he did not want to be understood as saying that lumbar puncture or the Wassermann reaction, or both, were by themselves sufficient for the diagnosis of general paralysis: while they were two very important points, there must be other neurological and mental signs, and each case must be reviewed in its entirety. The actual pleocytosis of the spinal fluid had not been of so much value, *per se,* as it had been in directing our attention to the probability of an organic basis, and thereby incited us to more careful physical and mental examinations, they in turn resulting in the rapid and marked percentage increase.

Dr. Fisher said that after a rather extensive experience with the poorest types of the insane at Bellevue and other city institutions, he was somewhat unprepared for the statement made by Dr. Mills in regard to the proportion of cases of general paralysis found in men and women. While the number of cases in women among the poorer classes was comparatively large, he could recall very few such cases in private practice. In studying these conditions, it was largely a question of statistics, by

which we could prove almost anything, and they were comparatively valueless unless the cases that were considered were taken from the same environment. The number of cases of general paralysis in women would doubtless vary greatly according to the patients' conditions of life—whether the figures were made up from among the poorer classes or from patients seen in private practice.

Another factor to be considered in connection with this subject was that, until comparatively recently, women had not taken such an active part in business life, etc., and many cases of general paralysis among them might have been cared for at home and escaped observation, whereas now, when women were in such active competition with men in many fields, their irregularities of conduct would be more apt to be brought to light.

Dr. Charles E. Atwood said he had long been under the impression that a certain proportion of cases of general paralysis in women had been left unrecognized under the older methods of observation as compared with the present helpful methods of diagnosis, but he was not willing to admit that the proportion was as great as Dr. Mills had suggested. He recalled that when he was first assistant physician at the Bloomingdale Hospital, some years ago, a very large per cent. of the cases on the male side were cases of general paralysis, while the number on the female side was exceedingly small. In that connection it should be borne in mind that the population of Bloomingdale was made up largely from among the well-to-do classes. Men were more apt to become infected with syphilis than were women, and the number of cases of general paralysis among them would be proportionately greater.

Dr. T. P. Prout thought the question of the relative number of cases of general paralysis in women, as compared with men, depended largely on the location of the institution from which its population was drawn. In metropolitan centers like New York we naturally found a larger percentage of paretics among women than in institutions peopled from rural districts. The institution at Morris Plains was of such a character, and the number of female paretics there during the years that the speaker was connected with it was small indeed: in an institution numbering one thousand population there were probably two women paretics, and they were looked upon almost as objects of curiosity. With the modern methods of diagnosis, a larger number of female paretics would doubtless come to light in all institutions for the insane.

Dr. B. Onuf recalled the statement of Moebius that there was absolutely no paresis without syphilis. He claimed that he could not be convinced that a patient could acquire general progressive paresis without previous syphilis until demonstration was made to him of a virgin affected with general progressive paresis (who had not acquired lues in some other than the usual manner of infection).

Dr. Benjamin Rosenbluth said that at the work-house he could recall only a single case of paresis on the female side.

Dr. Clark said he wished to emphasize the point already referred to by several of the speakers, that the high percentage of female paretics in certain institutions was largely dependent upon the locality from which the patients were drawn. He also called attention to the fact that too much stress had been laid upon certain psychoses that were present in the syndrome of general paralysis.

Dr. Clark said that his own experience with the insane covered the

institution on Ward's Island, with its metropolitan population, and the State Hospital at Middletown, Conn., which was largely rural. In the latter institution, with about 2,800 patients, there were only two female paretics during his service there extending over a period of two years. In recent years, the number of female paretics had probably also been augmented by a more careful investigation stimulated by the finding of a positive Wassermann.

Dr. Mills, in closing, said that one of the points he wished to emphasize in his paper was that any form of mental complex might occur in general paralysis. It was the presence of only a few physical signs or an atypical mental picture that had frequently induced them to do a lumbar puncture, and that in turn led to more careful physical examinations and the increased percentage of cases of general paralysis in women. The fact that practically 90 per cent. of their positive punctures gave a positive Wassermann pointed to syphilis as the predominating if not the universal factor in these cases.

Translations

DREAMS AND MYTHS. A STUDY IN RACE PSYCHOLOGY

By Dr. Karl Abraham

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Translated by Dr. William A. White

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(*Continued from p. 576.*)

Freud declares every dream to be egoistic. We have to learn to suppress all our egoistic tendencies. The majority, on social, familiar, and other grounds, we must by preference repress. When now, as in dreams, the unconscious comes to expression, the repressed emotions break through. Surely they must carefully disguise themselves; for their frank entrance would be prevented by the censor. The egoism of the dream expresses itself by the invariable appearance in the central point of the dream of the dreamer himself. This is certainly not meant in the sense that the dreamer always sees himself in the dream as the center of the dream process. Very often he follows, so to speak, the drama only as an onlooker. Then, however, he represents, through the actor, the title rôle. This rôle falls to a person who has a characteristic, an occurrence, or something in common with the dreamer. The dreamer identifies himself with the principal personage in the dream. So the appearance is brought about that the principal personage of the dream also occupies the most prominent place in the dream. As a matter of fact the identification signifies they are the same—"just as" one another (Freud, "Traumdeutung," S. 216). But "just as" cannot be expressed in the language of dreams; the dream can only express comparison by replacing a person or an object by an analogy.

That the object of the dream—a wish-fulfillment—is likewise throughout egoistic, we have often established in the discussions of Freud's explanations above. In the same sense are those other psychic structures egoistic which we have placed parallel with the dream. It would lead too far, at this point, to show this for the hysterical dream-states. The relation shows clearer in the chronic psychoses with delusional formation. The psychosis is also throughout egoistic. The patient is, under all cimcumstances, the central point of his delusional system. He is exposed to intrigues, injurious influences, persecutions of all sorts which are put in operation against him from all sides. His co-workers wish him out of the way, a detective is watching him. He is the one, single, righteous person against whom the world of unrighteousness and jealousy has declared war. He has placed himself in opposition to the world. So every delusion of persecution contains implicitly a delusion of grandeur. Psychiatry, in general, cares to speak of delusions of grandeur only when a special grandiose idea is expressed. We would do better to speak in a general sense of a grandiose complex. When we listen to an insane person relate his delusional system we are reminded by its structure of the sagas of mythology, which have been constructed about special figures. The delusional system of an insane person is like a myth in which he celebrates his own greatness. There are insane persons who assert themselves to be some particular, famous, historical person, perhaps Napoleon or Bismarck. Such a patient, who finds some analogy between himself and Napoleon, identifies himself with Napoleon without further ceremony—quite as we are wont to do in dreams. The psychoses have no expression for "just as" quite as the dream. If we go a little further into detail we find a wealth of proofs for the correctness of this comparison. Insane persons, for example, commonly refer their delusional ideas, especially their grandiose ideas, back to their childhood. I refer especially to the delusional ideas of birth because they are of great interest for the further analysis of the Prometheus saga. Cases of this sort are known to every psychiatrist. A patient asserts, perhaps, that the people whose name he bears are not his true parents; he is, as a matter of fact the son of a princely person, there is a mysterious reason why he should be put aside and on that account he was given over, when a child, to be cared for by his "parents." His enemies maintain

the fiction that he is of low birth in order to suppress his just claim to the crown or great wealth.

This delusion of birth reminds us again of the infantile day dreams in which the boy is a prince or king, and through his victories casts the fame of everybody else in the shade. The wish to become something great is satisfied by the phantasy of royal descent. For in the childish phantasy a prince is predestined, for no other reason than that he is a prince, to arouse the admiration of all the world. The object of desire of the mental stirrings of the child is to become great—in the double sense of the word. It appears to me that whoever, as adult, always succeeds or imagines himself to succeed has born a grandiose complex in his breast in his childhood. The phantasies, which he invented in his youth he forgets later. The complex, however, in whose service these phantasies stand, does not die before the man. If he sees, in his advanced age, his ambitions unfulfilled, then, the mentally sound as well, commonly transfer their wish-fulfillment back to childhood and become laudator temporis acti.

This grandiose complex is peculiar to the childhood of a race quite in the same way as to the childhood of the individual; also in the "historical" period of a race it does not vanish without leaving traces, as we have also been able to establish for the individual. Also in myths an identification takes place. The race identifies itself with the principal figure of the myth. "Just as" is also absent in myths.[26]

Every race has associated the beginning of their existence with a myth, which reminds us in a surprising way of the delusions of descent of the insane. Every race will descend from its god head, be "created" by him. Creation is nothing but procreation divested of the sexual. This appears with wonderful clearness from Kuhn's interpretation of the Prometheus saga. Prometheus "creates" the man; he is, however, if we search his history, the borer, generator and at the same time the fire-god. We learn from the Vedas of different sects of priests who were in the service of the fire-god Agni and derived their descent from fire! The names of these priestly sects (Angirasen, Bhrgu, etc.) mean either fire or flame. So man deduces his descent from the gods,

[26] Steinthal ("Die Saga von Samson," *Zeitschrift für Völkerpsychol. und Sprachwissenschaft*, Bd. 2, 1862) declares, that the word gleichwie (just as) has brought about the greatest revolution in the mental development of mankind.

whom he himself created, from fire, that he gave to god, from the world-ash, from which the fire came to him. Askr, the ash, in the northern sagas is the ancestor of the human species. So man, in the early times, projected his grandiose complex into the heavens. What unworthy successors are our insane who are satisfied with descent from a great person of this earth, and we ourselves, we do the same things in our childhood phantasies!

The Prometheus saga is also rich in examples of identification. It is only necessary to recall the identification of borer, lightning and man. If man is generated by god then is he, also, godly or the god is human. Man identifies himself then with the godhead. So it is in the older forms of the Prometheus saga; it is only in later times that creation has been set in place of procreation.

The old testament story of creation is only apparently an exception. In the story of Genesis the man surely does not descend from his divine creator. God creates man after his image; here in the manifest content of the story a similarity occurs in place of an identification. The descent of Israel is derived from the patriarchs. The researches of comparative mythology have disclosed, however, that the patriarchs are the changed forms of a heathen god world. So Israel originally derived its descent by divine causes. This view must adjust itself later to monotheism. Now the old family gods appear in the service of the single god. The national pride must be satisfied by bringing the patriarch into a specially close relation with their god. God appears in personal relations with them, speaks to them and makes agreements with them, which are binding on their descendants; these feel therefore again that their god is very near.

VI

The Effect of the Censor in Dreams and Myths. The Work of Condensation

We have come to know already of the idea of the censor. While in the dream the practiced repression of consciousness is removed, still the unfettered wishes are prevented from open expression. The censor does not permit the repressed idea expression by clear, unequivocal words, but compels it to appear in a strange dress. By means of the dream distortion the true (latent) dream content is transposed into the manifest content. The

latent dream thoughts already formed in the waking state are, as Freud has shown, on the way to becoming unconscious thought activities. The dream makes no new thoughts, it moulds over those formed in the waking state according to the demands of the censor. Freud distinguishes four ways in which this work is accomplished. We have now to prove whether similar relations exist in myths, whether a censor works here also and whether the myth makes use of the same means of presentation for evasion as the dream. We can here also use the Prometheus saga as a paradigm, but will draw upon other myths at certain places in the compass of our consideration.

Of the various processes of the dream work let us consider first "condensation." We have already learned to know it in the Prometheus saga but are then no nearer its understanding. Its surprise is, that the Prometheus saga, which appears so simple at first glance, in its few words gives expression to a great number of ideas. The latter form, as we have already seen, the latent content of the myth. One element of the manifest dream content very commonly contains not one but several dream thoughts. The relation is quite similar in myths. If the few words of the saga are to contain all these thoughts, as Kuhn's work has shown us, each word, so to say, must be "overdetermined," quite as it is in the dream. Dream interpretation is able to bring proof that a person appearing in the dream may represent several related realities. For example, it is not rare that a dream person may have the face of one person known to the dreamer and the rest of the body of another acquaintance. The dreamer thus brings these two persons in relation to one another probably because they accord in some important point. Every occurrence of the dream can likewise be numerously determined. In dream analysis we must therefore always take note of ambiguity; each word of the dream story may hold a double or more numerous meaning.

The elements of the myth, like the elements of the dream, are also overdetermined. The Greek Prometheus saga owes its form to a very active process of condensation. The form of Prometheus, as we have found by analysis, is condensed from three views. According to the first he is the fire god, according to the second he is the fire, according to the third he is man. From these ideas the saga of the robbery of the fire was condensed.

Steinthal[27] has put together, with great pregnancy, this extremely important conclusion of Kuhn's analysis: "After the fire god as man has come down from heaven he brings himself as man or as god himself, as god or as a divine element on the earth, and bestows himself as an element in himself as mortal."

To one who is accustomed to analyze dreams with the help of Freud's method the inner relationship of dreams and myths, on the basis of the common process of condensation, will be apparent. In apparently insignificant details of the myth he will distinguish condensations, quite analogous to what he has already met in dreams. Kuhn's analysis brings out for nearly every element of the Prometheus saga, for every single symbol, the proof of multiple determinations. I only call attention to how, for example, in the heavenly bird the most varied symbolic functions are condensed.

The strange neologisms of the dream have to thank the work of condensation for their occurrence. Freud gives ("Traumdeutung," S. 202 f., as well as in other places) interesting examples of this kind as well as their interpretation. The insane furnish examples of neologisms of a quite similar kind.[28] The normal man also does the same thing while awake when he "misspeaks." Examples of this can be found especially in Freud's "Psychopathologie des Alltagslebens." I will quote only an example from those that can be found there.[29]

"A young man said to his sister: 'I have quite fallen out with D., I do not greet her any more.' She answered: 'Altogether a fine (Lippschaft).' She intended to say relative (Sippschaft) but she crowded together two different things in this error of speech, that her brother had begun a flirtation with the daughter of this family, and this called up that she had recently been engaged in a serious, illicit love affair (Liebschaft)."

The same word condensations that we meet with in the normal individual's mistakes, in dreams, and also in the neologisms of the insane is offered us in the Prometheus saga. Pramantha (= Prometheus) produces by rubbing (Reiben) fire and . . . man; according to another idea he steals (raubt) the fire, in order to bring it to man. These two views are condensed in the name

[27] Steinthal, "Die Prometheussaga in ihrer ursprünglichen Gestalt," Seite 9.
[28] Jung, "Psychologie der Dementia praecox," Halle, 1907.
[29] Zweite Auflage, 1907, Seite 30 f.

Pramantha. Pramantha signifies the "bringer forth" (Hervorreibende), that is, producing by rubbing (Reiben), and at the same time the (fire) robber (Raubende). This condensation was made possible through the similarity in sound of the substantive matha (=the male genitals, compare the Latin mentula) and the verbal root math (=take, rob). There is still the double sense of Reiben (to rub) to be noted.

VII

Displacement and Secondary Elaboration in Dreams and Myths

Condensation explains, in the myth as in the dream, a great number of differences between the latent and manifest content. A second method, through which the unconscious leads to dream distortion, is called by Freud "displacement." This element of the dream work also finds its analogy in myths. From grounds, which will soon be evident, I will consider with displacement a third element of the dream work, "secondary elaboration."

When we began our consideration of the analogies of dreams and myths it was incumbent upon us to first show the authority for such a procedure. We could easily dispose of two objections while a third we left preliminarily unsettled. To it we must now turn back. The myth, one may object, according to the results of recent investigations, has gone through significant changes, before it took the form, in which it has come to us, while the dream appears to be a very fugitive structure born only for the moment. That is only apparently so. The dream content is, as a matter of fact, likewise a long time in preparation. If we compare the life period of man with that of the race we find that dreams and myths have their roots in the prehistoric time. We saw that the elements of the dream were already formed in the waking state. Now let us add: The development of the dream is not closed with the awaking of the dreamer. The concurrence of the ideas and wishes of the dream with the censor continues. If we seek to call a dream back to memory, especially when we are telling it to another person, the censor undertakes additional changes, in order to make the dream distortion more complete.

This is what Freud calls "secondary elaboration."[30] It is only a continuation of the work of displacement of the dream. Both processes are of the same nature and serve the same purpose. They displace content and affect of the dream. Those elements which possess prime significance in the dream thoughts play a more secondary rôle in the dream, while some unimportant incident is treated with exaggerated importance. Thus there comes about, as Freud expresses it, a "transvaluation of all values" in the dream. The insignificant becomes instead the significant pushed into the focal point of interest, and the affect-tone bound up with the dream thoughts is displaced from the significant to the insignificant. Both repeat themselves once again in secondary elaboration. It is exactly the critical places of the dream that most quickly and definitely relapse into repression after waking, whereby their reproduction is rendered difficult. The affect also suffers once again thereby the former similar modification.

When a complex of strong emotional value lays at the bottom of a dream, that complex—in the same or in a subsequent night —produces further dreams. These further dreams tend towards the same wish fulfillment as the first, they only draw within their reach new means of expression, other symbols, and new associations. A strong complex may express itself for years in the form of a recurring dream. In this respect it is only necessary to remember the previously detailed treatment of the typical dreams, for example the typical infantile nakedness dream. Again the typical dream is the means of transition from the consideration of dreams to that of myths. Mutatis mutandis we recognize the same psychological process in that the same dream accompanies an individual through the different periods of his life and becomes thereby gradually changed by the taking up of new elements, and that a myth suffers gradual modifications in the different life periods of a race.

(*To be continued*)

[30] I note here only those expressions of secondary elaboration, which appear on trying to reproduce the dream; these are of special significance for comparison with myths. As to the other results of secondary elaboration, which already during the dream influence its form, I will not discuss them.

Periscope

Deutsche Zeitschrift für Nervenheilkunde

(Bd. 43, Heft 1 and 2)

1. Unilateral Angiospastic Gangrene. BENDERS.
2. Studies in Cerebrospinal Fluid. BELTZ.
3. Hypertrichosis and Spina Bifida Occulta. EBSTEIN.
4. Word Deafness. BLOSEN.
5. Infantile Paralysis. SCHAUB.
6. Lesion of the Spinal Cord. WIMMER.
7. Jacksonian Epilepsy. BÄUMLER.

1. *Angiospastic Gangrene.*—The author discusses the various theories as regards the etiology, symptomatology and mechanism of production and reports a clinical case, which showed an onset with pain, disturbance of sensibility, cyanosis and necrosis. The gangrene he believes due to an anemia plus vascular alterations. He considers the anatomy and physiology of the sympathetic system in relation to his case. He believes that a hemorrhage limited in size irritated the vasomotor centers, and as the result of secondary changes in the spinal cord, there originated secondary vasomotor changes, partly irritative, partly paralytic.

2. *Cerebrospinal Fluid.*—A study of the value of the Nonne-Apelt or globulin reaction in which the writer corroborates for the most part the conclusions obtained by Nonne and others with this reaction in various syphilitic and non-syphilitic diseases of the nervous system.

3. *Spina Bifida.*—By the name of spina bifida occulta is understood those cases which externally show no vertebral cleft nor cystic tumor. The usual site of the affection is the sacral or lumbo-sacral region. Frequently the skin over this area shows a tuft of hair, which is the only external anomaly visible. The x-ray establishes the diagnosis.

4. *Word Deafness.*—Microscopical report of case I, reported clinically in an article by Dr. Quensel in this journal (Bd. 35). Quensel only gave a macroscopical description. Four lesions were found by Blosen; one was in the left frontal lobe, the second was in the left temporal lobe, the third was in the left parietal lobe and the fourth in the right temporal. Despite the double involvement of both temporal lobes there was no central deafness.

5. *Infantile Paralysis.*—Besides a clinical study of 65 cases the author gives the results of his experiments with animals. His researches show nothing new.

In his analysis of the symptoms in the clinical cases, the onset of the disturbance in motility recurred on the average about the 4th or 5th day, the lower extremities were most frequently affected, one third of the cases showed involvement of the back and abdominal muscles. Sensory disturbances were frequent in the early cases and consisted in hypesthesia and analgesia; one case showed hyperesthesia. Bladder and rectal disturbances were noted and some of the cranial nerves were also affected.

6. *Spinal Cord Lesion.*—Two cases of circumscribed spinal cord lesion showing Brown-Séquard paralysis were reported. The case coming to necropsy showed a neoplasm in the cervical segment.

S. Leopold (Philadelphia).

Monatsschrift für Psychiatrie und Neurologie

(Vol. 29, No. 5. May, 1911)

1. A Case with Writing Disorder as the Initial Symptom. Berger.
2. Studies of the Respiration in Mental and Nervous Patients. Part IV. The Excitability of the Respiratory Centers especially in Epileptics. Bornstein.
3. The Nature of the Katatonic Symptom Complex. Pförringer.
4. Acute Left-handedness in a Case of Katatonia-Hebephrenia on a Constitutional Basis. Klehmet.
5. Contribution to our Knowledge of the Spinal Root of the Trigeminal Nerve. Van Volkenburg.

1. *Writing Disorder.*—A woman of 62 after a slight stroke showed no neurological residuals, no disorder of speech and only a slight diffuse mental defect and poor power of retention. She had, however, lost the ability to write spontaneously. An attempt at a letter resulted only in a senseless jumble of letters and words. Writing to dictation was no better. She often made a letter wrong or wrote another character; she could not complete a word. There was the same difficulty with the left hand. She could copy letters, words and figures correctly, could read and understand written words. Six months later another apoplectic attack was followed by death. There were lesions in both caudate nuclei, a fresh hemorrhage in the right thalamus and several smaller lesions, but none of the cortex. One lesion interrupted the course that would be taken by fibers from the visual area to L. F. 2 and the author concludes that the writing disorder was caused thus by interruption of communication between the visual concept of writing and the center for finer movements of the hand. The case also shows that this symptom can result without any cortical destruction whatever.

2. *Respiration.*—In epileptics there is a slight fluctuation in the excitability of the respiratory centers which bears no relation to the convulsive attacks.

3. *Catatonia.*—Is there a relation, as in health, between the physical manifestations and mental content in catatonia? Are the motor symptoms the objective equivalent of affect and ideation? The author rehearses the various theories thus far advanced in the settlement of this question but adds nothing new.

4. *Acute Left-handedness.*—The patient, who showed quite plainly the symptoms of catatonia and hebephrenia, suddenly began to use the left hand by preference for all occupations, including writing. At the same time there was a noticeable slowing down in speech and writing as though the sudden taking up of these functions by the right hemisphere caused some difficulty. The author suggests that some very fine anatomical alteration might be found in the brain of such a case as this, which would throw light on the pathology and possible localization of types in dementia præcox.

5. *Trigeminal Nerves.*—Experiments were carried out on animals and

man which showed the following: The divisions of the peripheral trigeminus are arranged in the bulbo-spinal root with the most frontal lying ventrally to the more distally entering portion. The first come phylogenetically from the integument of the anterior frontal region, the latter from the area of the ramus mandibularis. Since in nearly all vertebrates the ophthalmic and maxillary divisions share in the innervation of the frontal region there is probably no discernible separation between the first and a part of the second branch.

(Vol. 29, No. 6. June, 1911)

1. A Contribution to the Localization of the Cortical Auditory Center in Man. BERGER.
2. Experiences with some Therapeutic Agencies in the Hands of the Neurologist. DIEHL.
3. A New Method for the Preparation of the Cerebral Arteries. STOELTZNER.
4. The Significance of Ehrlich's Dimethylamidobenzaldehyde Reaction in the Psychiatric Clinic. BUTENKO.
5. The Ability to Voluntarily Inhibit the Tendon Reflexes. RAIMIST.

1. *Auditory Center.*—A woman of 67 showed only the symptoms of a senile dementia when first admitted to the insane hospital. After two paralytic attacks eight weeks apart (which however left no permanent physical signs) she was totally unable to hear words or sounds. She spoke a few senseless combinations of syllables. She understood gestures and recognized people and surroundings. Reading and writing were not tested. A lesion was found on the left side involving L. T. 1 and L. T. 2 in their posterior portions. On the right side there was a similar but larger softening which destroyed a large part of F. 3 and angular and supramarginal gyri. The author believes that the deafness can only be attributed to those parts of the lesions which were symmetrical on the two sides, namely the first temporal gyri. The case does not allow of a conclusion as to whether the posterior part of the gyrus temporalis of the gyrus temporalis profundus (which was completely destroyed on both sides) is the center for hearing. It is quite probable that destruction of the whole convolution is necessary to produce deafness.

2. *Therapeutic Means.*—In nervous or habitual obstipation drugs are never necessary. In ten years the author has not given a laxative to even the most obstinate cases. The patient is required to remain at stool for 10 minutes at the same hour each day and devote attention and will to the object. In a few cases irrigation with a saline and soap solution was given but was only necessary once or twice. In the treatment of epilepsy, the sodium salt of bromine is by far the best and to avoid intestinal disturbance must be given, largely diluted. The bromides in psychoses are very unreliable. Arsenic as a sedative in chorea and tics is very useful and the new organic preparation of arsenic "atoxyl" is especially valuable in heart-neuroses and anxiety states. Veronal is the best and safest of all hypnotics. Aspirin has an excellent effect in all neuralgias and especially in periodic migraine.

3. *Preparation of Arteries.*—The method consists simply of pulling out the artery with forceps while the brain is under water. Even the smallest branches are thus obtained and the preparation may be dried, stained and mounted.

4. *Dimethylamidobenzaldehyde Reaction.*—This reaction bears no relation to the indican or to the diazo reaction. It does not occur in dementia præcox and psychogenetic conditions unless there are somatic complications. It occurs in a certain percentage of cases of general paralysis and epilepsy and is probably intensified after convulsions.

5. *Inhibition of Reflexes.*—In health nearly all individuals can inhibit the patellar and Achilles reflex by active stretching or contracting of the muscles, while it is generally impossible to inhibit them if the joints are possibly flexed or extended to maximum. Exactly the reverse of these two conditions obtains in organic cerebral diseases. The functional psychoses stand about half way between the two in the frequency of these phenomena.

C. W. Moore (Central Islip).

Revue Neurologique

(Vol. XIX, No. 19. Oct. 15, 1911)

1. Continuous Extension of the Great Toe as a Sign of Injury to the Pyramidal Tract. J. A. Sicard.
2. The "Lesser Signs" of Organic Hemiplegia and their Semeiologic Value. L'Hermitte.

1. *Continuous Extension of the Great Toe.*—Normally the great toe is on a lower plane than the one next to it. Sicard has observed that in organic hemiplegias, also in sunstroke and in meningitis, the great toe is held permanently extended with the extensor tendon prominent. The continuous extension is also observed in spastic paraplegias. This sign is particularly valuable in cases where hyperesthesia plantaris renders the Babinski sign difficult to obtain on account of the reactions of defence.

2. *Signs of Organic Hemiplegia.*—The sign described by Souques under the name of "phenomena of the interossi" consists in commanding the patient to elevate the paralyzed limb; at the same time the movement is executed there is a spreading and extension of the fingers. It may occur when the limb is passively elevated. The sign of Klippel and Weil: the attempt to straighten the contractured fingers of hemiplegics causes the thumb to flex across the palm. In normal individuals passive extension of the fingers causes extension of the thumb. The phenomena of Raïmiste: the patient lying down with the elbow resting on some firm support, the forearm and hand is then raised passively, keeping both in the same plane by supporting at the wrist. The patient's attention is then distracted and the support to the hand removed by sliding the examiner's hand gently down the forearm. In organic hemiplegia the hand falls into a position of about 130–140° angle with the forearm. Raïmiste claims that the sign is due to a hypertonia of the flexors in hemiplegics inasmuch as it does not occur in normal individuals or in those profoundly under the influence of chloroform. It is absent in hysterical hemiplegia. Milian finds that the corneal reflex is abolished on the paralyzed side but persists on the unparalyzed side even in deep apoplectic coma, whereas, in toxic comas, the reflex is bilaterally abolished thus excluding the diagnosis of apoplexy. Meunier finds, in non-comatose hemiplegics, that the corneal reflex is diminished or abolished on the affected side unless the case is a very old one and even then there is usually some difference. In hysterical hemiplegia the reflex is abolished as frequently on the normal side as on

the paralyzed side. Hoover's sign: the patient lying in the dorsal position is asked to elevate the paralyzed leg, when it will be noticed that the normal leg exerts a proportionate pressure against the bed. This counter movement is absent in hysteria. Claude has observed that in some hemiplegics, although there is total absence of voluntary movement, the forearm may flex if it is forcibly supinated or pronated or the leg flex if the skin of the thigh is pinched. Claude regards this as a favorable sign, the hemiplegia in such cases being due to circulatory troubles or edema rather than actual destruction of the pyramidal tract. A somewhat similar sign has been observed by Marie and Foix: forced flexion of the toes or transverse pressure on the foot causes a slow flexion of the leg. It indicates a lesion of the nervous system as the cause of the hemiplegia, but has no prognostic importance.

(Vol. XIX, No. 20. Oct. 30, 1911)

1. A Case of Sciatic Radiculitis due to Tuberculosis, with Autopsy. TINEL and GASTINEL.
2. Appearance of a Piece of Bread or of a Worm-eaten State due to Multiple Lacunæ in the Brain.

1. *Sciatic Radiculitis.*—The patient was 28 years of age and had had tuberculosis of the lungs for about six years. He died of tuberculous meningitis, in the hospital. Thirteen months previous to his admission to the hospital he complained of sciatica on the left side. The pain was very severe and he was confined to bed for two months. Six months later he had a second attack of sciatica which was cured in six weeks. He had also at one time, four years before, complained of severe headache which had persisted for seven months. On his admission to the hospital he was suffering from the ordinary symptoms of tuberculous meningitis and there was no sign of the sciatica except that the left leg was smaller than the right. At autopsy there was found an acute tuberculous meningitis superimposed on an old one which the author believed was the cause of the previous headache. In the lumbar region of the spine there was found old cicatricial tissue in the first and second sacral nerve roots. These latter findings apparently explain the cause of the attacks of sciatica.

2. *Worm-eaten Appearance of the Brain.*—The specimen was obtained from a patient who had suffered for more than ten years with neuralgic pains in the legs for which various treatment had been tried: lumbar puncture, stovaïnization of the spinal cord, retrorectal injection of artificial serum, amputation of toes, and stovaïnization of the sciatic nerve without success. Trephining over the sensory-motor region of the brain gave some relief but the pains recurred and resection of the posterior nerve roots gave no relief. About one year after the last operation he died in an epileptic attack. Th brain was full of small, smooth walled cysts giving the appearance described by the title.

(Vol. XIX, No. 21. Nov. 15, 1911)

1. A Case of Friedreich's Disease with Autopsy. LAMBRIOR.
2. Remarks on the Phenomena of Piltz-Westphal and the Sign of Chas. Bell. CAMPOS.

1. *Friedreich's Ataxia with Autopsy.*—The patient had been under

observation for eleven years and was a typical case. The autopsy and histological examination of the tissue was most complete and detailed including not only the nervous system but muscles, heart, blood vessels, and internal organs. Degeneration of the anterolateral group of cells in the first dorsal segment explained the atrophy of the thenar and hypothenar eminences. There was a chronic myocarditis which the author thinks might be explained by a lesion in the dorsal nucleus of the pneumogastric. The lesions in Friedreich's disease are not the same in all cases. Those which are fundamental are represented by the degeneration of the posterior columns and posterior roots, the peripheral nerves and the columns of Clark. The contingent lesions are the degeneration of the crossed pyramidal tract, the direct cerebellar and Gowers' tracts and the anterior horns. The heart may be affected in Friedreich's disease as a result of the affection or "be due to the same infectious or toxic-infectious process."

2. *Phenomena of Piltz-Westphal and the Sign of Chas. Bell.*—A discussion regarding certain claims of priority in describing these phenomena and the manner of their production.

(Vol. XIX, No. 22. Nov. 30, 1911)

1. A Case of Epileptic Dementia with Maniacal Attacks and Stuporous States. C. Vurpas and R. Porak.
2. The Cell Structure of the Cerebral Cortex. Ch. Ladame.

1. *Epileptic Dementia.*—The father of the patient was an alcoholic who died of paresis. The first attack of epilepsy occurred at the age of six years. From then until the age of nineteen the attacks continued and became more frequent. At this time there was marked diminution in intelligence and she also developed maniacal attacks which would last a day or two and required isolation. The attacks of agitation ceased after a year and were followed by a period of semistupor, alternating with attacks of profound unconsciousness, which lasted nearly two years. After this she became brighter mentally but continued to have attacks. She was found dead in bed one morning, but no autopsy was permitted.

2. *Cell Structure of the Cerebral Cortex.*—An abstract of the work of K. Brodmann on this subject. The author believes that these researches will change our ideas as to cerebral organization and the pathology of mental diseases.

(Vol. XIX, No. 23. Dec. 15, 1911)

1. Mental Troubles in Staphylococcemia. Soukhanoff.
2. The Sign of Chas. Bell. Bonnier.

1. *Mental Troubles in Staphylococcemia.*—The mental disturbance consisted of semiconsciousness, incoherent speech and disorientation. The onset was sudden. Abscesses in skin and joints, convulsive attacks, some fever and skin eruptions were the other symptoms described. There was no necropsy and no blood culture.

2. *Bell's Phenomena.*—Concerning an article by Campos (*Revue Neurologique*, Nov. 15, 1911) on the same subject, largely polemical.

(Vol. XIX, No. 24. Dec. 30, 1911)

Proceedings of a meeting of the Paris Neurological Society devoted to a discussion of "The Delimitation of Tabes."

Cases presented: "Arthropathy of the Knee of Tabetic Type with Argyll-Robertson Pupils and Lymphocytosis of the Spinal Fluid without other Signs of Tabes," by de Massary and Pasteur-Vallery-Radot. "Tabes with Inversion of the Knee Jerk," by Dejerine and Jumentié. "Tabes with Gastric Crises in Connection with Variations in Arterial Tension," by Claude and Cotoni. "Hemiplegia and Tabes," by Boveri. "Arthropathy of Tabetic Type without Tabes," by Mauclaire and Barré. "Perforating Ulcer, Loss of Achilles Reflexes and Lymphocytosis of the Spinal Fluid. Tabes? or Pretabes?" by J. A. Sicard. The "Report on the Clinical Delimitation of Tabes" was read by de Massary; "The Pathological Delimitation of Tabes," by Nageotte. The diagnostic value of the principal symptoms; the minimum number of symptoms necessary for the diagnosis of tabes; and the diagnostic value of lymphocytosis in the spinal fluid were other questions discussed by members of the society.

CARL D. CAMP (Ann Arbor, Mich.).

Book Reviews

Friends of the Insane and Other Essays. Bayard Holmes, M.D., Cincinnati. The Lancet-Clinic Publishing Company, 1911. Pp. 270.

This is a collection of short essays on all sorts of subjects connected with medicine. They are merely put together from having been printed elsewhere and so the book as a whole has no coherence whatever. It might be judged from the title that the essays of special value would be those dealing with the psychoses. From looking over these essays, however, one comes away with a feeling of great disappointment. The author seems to be far removed from touch with the present psychiatric trend. Some of his essays are rather startling. There is one on Beriberi and Dementia Præcox and one on Pellagra and Adolescent Insanity. He states that the proper attitude toward beriberi, Kala-azar, pellagra, and the milk-sickness of the prairies is the proper attitude toward adolescent insanity. This conclusion is reached after drawing a lot of parallelisms between the two disorders which are, to say the least, extremely superficial. It may be noted that although the book bears the date of 1911 the statement is made that beriberi is a disease of unknown origin. As a whole the work is of no special value, the essays, in the main, merely containing such information as anybody with a conversational equipment regarding the various subjects might have.

White.

Caisson Sickness, the Physiology of Work in Compressed Air. By Leonard Hill, M.B., F.R.S. Longmans, Green & Co., New York. $2.

This, the fourth volume of a series of International Medical Monographs, is a timely one, especially for physicians in the eastern part of the United States where so much tunnel work is in progress.

Dr. Hill has given a complete analysis of the entire situation and in a manner that could hardly be surpassed. This praise applies more to the physiological considerations than to the clinical features. In the latter respect there is room for more evidences of experience.

Jelliffe.

Developmental Pathology, A Study in Degenerative Evolution. By Dr. Eugene S. Talbot. Published by Richard G. Badger, Boston. Pp. 435.

This is a work along the lines of developmental pathology. It sets forth what, until the expression was more or less discredited, would have been called a short time ago the physical signs of degeneration. The author lays particular stress upon the fact that many arrests of development may take place either in intra-uterine life or during infancy, as the result of the eruptive fevers, etc., which produce defects in development. These defects are then not due in any sense to heredity and therefore cannot be explained upon that principle.

The work discusses at considerable length all of the physical signs of reversions of type, particularly those that relate to the development of the skull, especially of the face, the teeth, the ears, the nose, in fact all of the bony structures and organs of the body. The work is an excellent reference work for matters of this sort.

WHITE.

ARBEITEN AUS DEM HIRNANATOMISCHEN INSTITUT IN ZURICH. Prof. Dr. C. v. Monakow. Vol. V. J. F. Bergmann, Wiesbaden.

The fifth volume of this important series contains three studies. One by v. Monakow on the foundations and localizations of movements in man has been reviewed in this JOURNAL. The second is by S. Borowiecki and is a "Comparative Anatomical and Experimental Investigation of the Pontine Gray Matter, and the Important Connections of the Pons." The third is by K. Löwenstein, and deals with the Fiber Tracts of the Optic Radiations, the Inferior Longitudinal Bundle and Türck's Bundle with Clinical Notes on Tumors of the Right Temporal Lobes.

Borowiecki's study is a minute and extended analysis of the pons structure. Inasmuch as his own conclusions occupy thirty pages of closely written text, we shall not attempt a further résumé of them. It is an anatomical study of much significance in a nervous structure as yet imperfectly analyzed.

Löwenstein's study contains much anatomical as well as clinical material, the latter being subordinated to the former. It does not admit of short analysis. One point of moment may be taken out of the rich material. Löwenstein's two cases of temporal lobe tumors showed a series of symptoms closely analogous to thalamus implication, and he suggests that in view of the rarity of right sided temporal lobe tumors, and the difficulties in localization, that such thalamic syndromes may afford a useful clue as to the topical diagnosis. These thalamic signs simulate closely those of a thalamic tumor, but the possibility of right temporal lobe implication must be borne in mind in just such cases.

JELLIFFE.

CASE HISTORIES IN NEUROLOGY. By Dr. E. W. Taylor. Published by W. M. Leonard, Boston, 1911. Pp. 305.

This work belongs to a series which has for its object the presentation of the subject matter of the different departments of medicine by means of the case history method. This method needs no explanation. It has been made popular by Cannon and particularly by Cabot. It has its advantages and it has its disadvantages. The present work is an excellent example of the application of this method of presentation of a subject. Preceding each one of the main sections, as for example the section on Diseases of the Brain, there is a short chapter summing up the important anatomical and diagnostic points that it is essential to keep always in mind. An excellent feature of the work is its free illustration by simple drawings of cord sections and brain outlines showing the localization of lesions, and further illustrations such as fields of vision where necessary. The cases are very simply and clearly put and are so classified both by table of contents and index that they are easy of reference. The work is heartily recommended.

WHITE.

Cesare Lombroso, A Modern Man of Science. By Hans Kurella, M.D. New York, Rebman Company. Pp. 194.

This little work is an account of the life and the scientific activity of the great Italian criminologist, written by a man who is in entire sympathy with Lombroso's objects and aims, and who writes understandingly of his scientific views considered from the standpoint of the times in which they were promulgated. It is a most excellent brief of the life of a great man devoted to the service and welfare of the people and having a profound influnce upon the scientific thought of the world.

White.

Treatment of Neurasthenia by Teaching of Brain Control. By Dr. R. Vittoz. Longmans, Green & Co., London, 1911. Pp. 117.

The character of this book can best be set forth briefly by a couple of quotations.

"We have, however, found, contrary to the opinions generally accepted, that after a certain amount of training, the physician's hand can, when placed on the patient's forehead, give him sufficiently exact indications as to the working of the latter's brain. . . ."

The following is the first exercise in concentration: "When beginning it is too difficult to concentrate on an idea. We therefore suggest as the first exercise that some curve should be followed out in the mind, or if preferred, the figure 8, or, better still, the mathematical symbol of infinity should be imagined by the brain.

"One would hardly suppose that such a simple exercise would present any difficulty, and yet many patients are incapable of doing it correctly.

"If the exercise is well done, the physician will feel a regular double undulation, if badly done, he will notice interruptions always immediately after the exterior curves, and, moreover, with a little care the patient will notice it himself."

White.

Athetosis Treated by Partial Resection of the Motor Nerves. Medea and Bossi. (L'Ospedale Maggiore, No. 4, 1911.)

In this paper, which was read before the Societa Medico Biologica, at its meeting of May 29 1911, the authors report the favorable results of the partial resection of motor nerves in cases of athetosis. They give the history of a case in which abnormal and involuntary movements of the latissimus dorsi were more especially in play. Here the partial resection of the nerve of this muscle, while still permitting its normal and voluntary movement, reduced its morbid excess, and also attenuated the excess of pronation of the hand.

Their mode of procedure is as follows: Having uncovered the median nerve at the fold of the elbow, they isolate a small bundle of fibers by mechanical excitement, with a pair of pincers, which brings on a movement of pronation. About half of these fibers are resected for the length of about 5 cm., and in this way they are able to reduce the excessive and involuntary movement of pronation while leaving the possibility of voluntary pronation unaltered. Their observations in this and similar cases has led them to the conclusion that mechanical excitement is of much more service in individualizing one special bundle of fibers in a nerve than electrical excitement, owing to the greater facility with which the latter diffuses itself through the whole of the nerve trunk, causing the contraction of all the

muscles innervated by the common nerve. Mechanical excitement, on the contrary, enables the surgeon to see that the motor fibers innervating a single muscle are already grouped so as to form distinct bundles in the trunk. The authors state that this method has also enabled them, in children presenting sequels of acute poliomyelitis anterior, to separate, at the popliteal hollow, from the internal popliteal, the fibers leading to the healthy muscles and to graft them on the external popliteal, or the reverse, the results obtained proving very satisfactory. They think that the method may be found useful also, in cases of neuralgia, in distinguishing the sensitive fibers from the motor fibers.

In conclusion they state their belief that their mode of procedure is superior to treatment by injections of alcohol in the previously isolated nerve, because not only does it not cause real neuritis but it does not damage alike indistinctly all the various parts of the nerve.

(Author's Abstract.)

Revue General d'Histologie. Ch. Bonne. L'Ecorce Cerebrale, Fasc. 6, Tome II. Revue et Complete par le Dr. M. Lefebure: Fasc. 12, Tome IV. A. Storck & Co., Lyons, Masson et Cie, Paris.

This two-volume contribution to the histology of the cerebral cortex is one of the extensive authoritative summaries of present-day histology. The first volume deals with the development, morphology, and connections of the nerve cells. It was completed in 1907 and brought the facts then known into a summarized and available form. The second volume on cytology, regional and zoological variations presents the recently acquired topographical studies of Hammarburg, Campbell, Bordmann and others in clear summaries, which do not omit essential details. The sudden death of the author prevents the completion of his plan, which is greatly to be regretted. Dr. Bonne was an assistant physician in an asylum in Toulouse.

The volumes are beautifully illustrated, and make excellent reference works.

Jelliffe.

Ueber die Dummheit. Eine Umschau im Gebeite menschlicher Unzulänglickkeit. Von Dr. L. Loewenfeld. J. F. Bergmann, Weisbaden. M. 5.

One sympathizes with an author who wishes to present a "review of human insufficiency." Stupidity seems to be the universal attribute of "the other fellow." Yet few of us will admit, even to ourselves, that we may show the signs of "Dummheit."

It may be, not for this reason alone, that Loewenfeld's book will prove of interest to neurological readers, but because he directs attention to the border line cases with which psychiatry is constantly working.

The program is not without originality. The author first discusses general and partial stupidity, and stupidity as a quality of intellectual capacity. Stupidity and talent are then discussed, with the Courbet case as a sample. Further chapters deal with special forms of "dummheit"—as shown in excessive forms of egotism, pride, vanity. The type of Tartarin of Tarascon. Combinations with great suggestibility, with superficiality, with conceitedness. Stupidity and passion and its dangers gives us an interesting chapter as well as that on stupidity and superstition.

The organic foundations, pathological causes and retardation in development are treated of in three short sections.

The statistical features occupy a third section, and then Loewenfeld discusses the stupidity of the intelligent. What physician does not come in contact with this problem? The stupidity of the masses—how easy it is for the practical politician to manipulate for his advantage. Witness the new laws giving increased patronage to the judges on matters concerning questions of insanity, and the manipulation of the stock markets by jockeying legal methods.

These factors our author has not overlooked, but has shown very cleverly how universal stupidity is utilized. He also discusses the many amateurs and would-be great, the small musicians, artists, poets, teachers, professors, judges and politicians. The stupidity of the masses, Boulangerism, Dreyfusism, and similar catch phrase party terms are discussed.

He finally discusses "dummheit" of the past, and outlines what may be done to diminish it in the future.

The thoroughly human note of the book cannot be overlooked. It is entertaining, instructive and optimistic.

JELLIFFE.

MENTAL FATIGUE. By Dr. Max Offner; translated by Guy M. Whipple. Baltimore, Warwick & York, 1911. Pp. 133; price $1.25.

This work belongs to a series of educational psychology monographs. It is a concise statement of the problem of fatigue in relation to the special subject of education, dealing with fatigue in its various forms, the methods of its measurement, its laws, and the various factors of fatigue in the teacher and in the scholar. It is only a small work; the chapters are short, and the whole matter is condensed in the smallest possible space. Considering the difficulties which such condensation creates, it is wonderfully well done, being a perfect fund of tersely expressed information from cover to cover, and can be highly commended to all those who desire to acquaint themselves with the problem of fatigue, a problem, by the way, which is becoming more and more important, not only in educational work, but in other branches of applied psychology, such, for example, as the problem of factory efficiency. The translator has added a valuable bibliography, especially one for the English readers, and an extremely interesting appendix giving an account of the German School System.

WHITE.

DAS PATHOLOGISCHE IN DER MODERNEN KUNST, von Willy Hellpach. Heidelberg, 1911. Pp. 44.

A series of running comments on the outcrop of the pathological in the various expressions of modern art.

WHITE.

ERGEBNISSE DER NEUROLOGIE UND PSYCHIATRIE. Redigiert von Prof. Dr. H. Vogt and Doz. Dr. R. Bing. Gustav Fischer, Jena.

This is a new review of neurology and psychiatry. It will be devoted practically to critical reviews and more lengthy discussions of important topics in its respective specialties.

The opening contribution is by Isserlin, of Munich, on the Movement and Advances in Psychotherapy. It is a scholarly and useful article. He limits his discussion to suggestive therapy, educational therapy and the psychoanalytic method, toward the two former of which he is sympathetic

but to the latter antagonistic. His critique of the psychoanalytic method is worth reading, although it is evident that the author has little personal experience with it. His greatest stumbling block apparently is the vexed question of symbolism. There is a bibliography of 400 titles.

The second paper is a masterly one by Mingazzini on the Pathogenesis and Symptomatology of Cerebellar Disease. He divides his review into a clinical consideration of Softening and Hemorrhage, Tumors, Abscesses, Atrophies and Ageneses. Practically all of the best work upon the cerebellum has been gathered together in this monographic review.

A third interesting review is by Walther Spielmayer, on Paresis, Tabes and Sleeping Sickness. That paresis and tabes originate on a syphilitic basis seems certain, but there are still many dark spots in the problem of this causal relationship and many contradictory situations. Mönkemöller's recent study of the history of paresis seems to establish it as not having been observed by the ancients.

The final paper is by Kleist on Apraxia. It is a masterly presentation of the Wernicke School.

We welcome this new review and wish it many years of prosperity.

JELLIFFE.

IN JEDES MENSCHEN GESICHTE STEHT SEINE GESCHICHTE. Von K. Noghe. Orania-Verlag, Oranienburg. Pp. 211.

This is a work that harks back to the shades of Gall and Spurzheim. The only footnote observed is a reference to a work on the physiognomy of disease, published in 1842. In the setting of that time the work would be in place.

WHITE.

ELEMENTS OF PHYSIOLOGICAL PSYCHOLOGY. A Treatise on the Activities and Nature of the Mind from the Physical and Experimental Points of View. By George Trumbull Ladd, LL.D., and Robert Sessions Woodworth, Ph.D. Charles Scribner's Sons, New York.

This is a thoroughly revised and rewritten edition of Ladd's well-known "Physiological Psychology." This latter has been a classic for twenty-five years and it is a pleasure to welcome its reincarnation in the present rewriting. Many works are spoiled by such attempts at reconstruction but this one is an exception and readers of the older volume will hardly recognize the old landmarks, so thoroughly have the authors reworked their new material.

For a thoroughly comprehensive survey of the physiology of the nervous system especially in its mental relations we know of no more representative work.

JELLIFFE.

A CLINICAL STUDY OF ACUTE POLIOMYELITIS. By Francis W. Peabody, M.D., George Draper, M.D., and A. R. Dochez, M.D. Monographs of the Rockefeller Institute for Medical Research. Pp. 187, 13 plates.

Another volume added to the already voluminous literature of this disease. One of the chief services of this contribution to the subject is its excellent description of the different clinical types of the disease, particularly the unusual and abortive forms which are so frequently overlooked in practice.

WHITE.

Notes and News

HONORARY DEGREE CONFERRED

At the eighty-first annual commencement of Wesleyan University at Middletown, Conn., held on June 19, the degree of doctor of laws was conferred upon Dr. Amos. J. Givens, proprietor of Givens Sanitarium for nervous diseases at Stamford, Conn.

THE PSYCHOPATHIC HOSPITAL, 74 Fenwood Road, Boston, was open for public inspection, June 21, and for the reception of patients two days later. The institution is officially a department of the Boston State Hospital and its business arrangements are to be under the charge of the Superintendent of the Boston State Hospital, Dr. Henry P. Frost. The director of the institution is Dr. E. E. Southard, Pathologist to the Massachusetts Board of Insanity and Professor of Neuropathology in the Harvard Medical School.

The Chief of the Medical Staff is Dr. Herman M. Adler, formerly of the Department of Theory and Practice of the Harvard Medical School, and more recently, Pathologist to the Danvers State Hospital. The immediate executive arrangements are under the control of Dr. Stephen E. Vosburgh, formerly Assistant Physician at the Boston State Hospital.

The Pathologist and Chief of the Out-patient Department have not yet been appointed.

The hospital contains 100 beds—50 of which are in a separate pavilion called the Reception Ward, and 50 are on the top floor of the main building in the so-called Observation Ward.

The Reception Ward has a clearing-house function for the insane of Boston. The Observation Ward is for the investigation of special cases under special arrangements. Much stress will be laid upon investigation of psychiatric problems and upon the social service problems of the out-patient department.

A longer account of the institution will appear in the Annual Report of the State Board of Insanity of Massachusetts for 1911.

FROM September 9 to 28 Fordham University will be the Mecca for all those interested in nervous and mental diseases in the United States. Dr. Henry Head has just finished rehearsing at the London Hospital the series of lecture demonstrations he is scheduled to give here. Head's "areas," his pioneer work on protopathic and epicritic sensibility, his masterly investigations of the function of the optic thalamus are familiar to every physician. Of special interest to American neurologists will be Head's demonstrations of his instruments and of his technique of examination. To mention Head's name is to suggest that of his collaborator, Dr. Gordon Holmes. Head's general survey of the whole question of sensibility will be correlated with Gordon Holmes' lecture demonstrations on topographical diagnosis.

The many friends and admirers of Dr. Carl Jung, of Zurich, will doubtless welcome this opportunity of having psycho-analysis expounded by its creator. The Kraepelin school is to be represented by Dr. Alwyn Knauer, of Munich, whose work on psychopaths has so greatly advanced our knowledge.

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Original Articles

REPORT OF TWO CASES EXHIBITING LESIONS OF SPECIAL INTEREST FOR THE LOCALIZATION OF APHASIC DISORDERS. PRESENTATION OF SPECIMENS[1]

By LaSalle Archambault, M.D.

ADJUNCT PROFESSOR OF NEUROLOGY IN THE ALBANY MEDICAL COLLEGE, ATTENDING NEUROLOGIST TO THE ALBANY CITY HOSPITAL AND TO THE TROY CITY HOSPITAL

I have in my possession the brains of two individuals who were carefully observed clinically. The lesions which they present do not fully harmonize with the classic conception of the pathology of aphasia. While I have neither the intention nor the desire of reopening the controversy on the localization of aphasic disorders, I feel that, inasmuch as accurate data, both clinical and anatomic, are available in these cases, the facts may be sufficiently interesting to be submitted to the members of the Association.

Case I.—Mr. M. C., 70 years of age, the father of three children and a launderer by occupation.

The patient had been more or less constantly under observation during the four or five years which preceded his last illness, owing to the fact that he had developed, at the age of 60, a rather well-defined postero-lateral sclerosis, which later necessitated his admission to a hospital for chronic invalids. There existed, therefore, abundant opportunity to become acquainted with him and to note carefully both his personal characteristics and the features

[1] Read at the Thirty-eighth Annual Meeting of the American Neurological Association, held in Boston, Mass., May 30 to June 1, 1912.

of his subsequent ailments. It is well established that the man was right-handed.

The characters of his medullary affection hardly demand any description here, as they present nothing of immediate interest to us in the study of the cerebral lesion with which we are actually concerned.

In February, 1910, the patient had a severe attack of lobar pneumonia which left him in a state of profound prostration. It was at this time that the first indications of focal cerebral disorder came to notice. Although nothing definite could be ascertained regarding its mode of onset, a hemiplegia of unevenly dis-

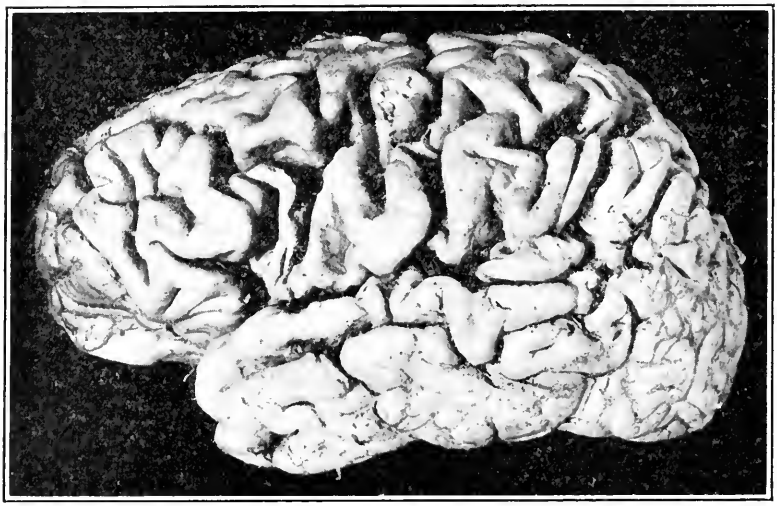

FIG. 1. Softening at the bifurcation of the Sylvian fissure.

tributed intensity had developed on the right side. While the lower extremity was hardly weaker than it had been before and the face showed but limited palsy, the upper extremity was almost absolutely inert. The arm was held in a fixed attitude of semi-flexion and complete pronation, and immediately returned to this position whenever an attempt was made to overcome it by passive movements. The tendon reflexes were all distinctly livelier on the right than on the left side, but the Babinski phenomenon was not observed. While the patient was evidently depressed as the result of this additional disability and spoke little, there was no evidence of either disorientation or other impairment of the higher mental faculties. His speech was slow and monotonous, but it had been so habitually. The first letter or syllable, especially of a long word, was sometimes imperfectly articulated, so that a certain

degree of dysarthria was occasionally observed. The patient never failed, however, to find the desired word. He understood perfectly all that was said to him, answered questions correctly and was quite able to read as well as he ever had. He was submitted to all the tests usually employed for the detection of aphasic disorders, but no deficit whatever could be demonstrated. The various tests were repeatedly applied subsequently and they invariably yielded negative results. Although the patient rallied remarkably well at first from his paralytic stroke, his general strength gradually ebbed away and he died June 2, 1910, without having materially recovered from his brachial monoplegia. He was kept under close observation during this entire period and no additional phenomena appeared. There can be no doubt, therefore, that this patient never exhibited the least trace of motor aphasia.

At the autopsy, the brain presented evidence both of diffuse retrogressive changes and of focal disease. There existed a generalized chronic leptomeningitis associated with well-marked cortical atrophy and fairly pronounced ventricular dilatation. The cerebral blood vessels generally exhibited a considerable degree of atheroma. In the left cerebral hemisphere, a sharply circumscribed area of softening was found at the point of bifurcation of the Sylvian fissure. This lesion, as the specimen distinctly shows, destroys completely the posterior third of the inferior frontal convolution and slightly involves the inferior third of the ascending frontal convolution. The hemisphere has been purposely left intact, as it is to be utilized later for the study of secondary degeneration. I do not see, however, that sectioning the specimen would affect in any way the conclusion which practically forces itself upon us, namely, that a lesion of the left inferior frontal convolution in a right-handed individual does not necessarily determine motor aphasia.

Case II.—Mrs. J. W. C., age 54, the mother of two children, and a woman of high culture and fine intellectual attainments. Patient was right-handed.

Her past history furnished nothing of particular significance with the exception of the fact that the patient suffered from chronic interstitial nephritis and from cardiac valvular disease.

The first manifestation of cerebral disorder appeared June 12, 1908. The patient had journeyed with some friends to and from a neighboring city on a Hudson River boat, and, although she seemed to be enjoying her usual health on starting out, it was later remarked that she did not say a word. Peculiar as this was, most of the party regarded her mutism as a manifestation of ill-humor and purposely avoided taking further notice of the circumstance. Upon returning, however, and just as she entered the station, the patient was seized with a very severe convulsion associated with loss of consciousness. As she subsequently showed

no more disposition to speak than she had prior to the attack, it became evident to all that her condition was extremely serious and the family physician was hastily summoned. Motor aphasia was complete and remained complete for fully one week. The patient later regained entirely her ability to speak fluently, but only after three or four weeks had elapsed. There was an associated agraphia which likewise cleared up at the same time. After the patient recovered the power of speech, she exhibited no trace whatever of dysarthria, nor was there any evidence of sensory aphasia. From this time on, and during a period covering almost three years, severe convulsions followed by motor aphasia of one to three days' duration occurred with almost the periodicity of true epilepsy at intervals of about six weeks.

On the 20th day of February, 1911, the patient had a severe apoplectic attack accompanied by coma, which lasted somewhat less than twenty-four hours. As consciousness returned, a residual right-sided hemiplegia and complete motor aphasia became manifest. The patient was quite unable to say anything for fully three days. Then it became possible for her to say "yes," "no," "water" and a few other simple words, to which still others were gradually but very slowly added. She continued to thus increase her word-supply until about the eighth week after the onset of her paralytic disorder, but this increase did not amount to much more than a recovery of about one fifth of her original vocabulary, if it equaled as much. Spontaneous speech was not much in evidence and usually required some urgent need for its manifestation. Whatever the patient did say was spoken in answer to direct questioning, and in so doing she rarely completed a sentence. Almost invariably it had to be completed for her either by the nurse in charge or by a member of the family. Generally, she could repeat the word after once hearing it, but sometimes she could not. As is usually the case, the names of persons and things were those which failed her most completely. The names of her family, of her own children, she could not produce, and then she would point to their photographs on the wall or on the mantel-piece and indicate with the finger which one she referred to. As she rarely completed a sentence and a good part of it had to be completed often by pure guesswork, it sometimes happened that the companion's best effort was not successful and that the patient's meaning or purpose was not expressed. She would then interpose at once, and say "no, not that." She very seldom used the wrong word, but exceptionally she did, and then she would use a particularly irrelevant term. She never failed, however, to appreciate the fact at once. There was no dysarthria; whatever the patient said, was correctly articulated. There was at no time the least evidence of word-deafness or sensory aphasia. Perfectly oriented as to all that occurred around and about her, and fully realizing the significance and gravity of her own malady, the patient was

visibly depressed and frequently expressed the desire that she might die. Owing to her constant brooding, her faculty of attention appeared distinctly more impaired than it actually was. Her powers of comprehension at all times seemed perfectly intact. The patient could not read nor would she allow any one to read to her—a pastime which repeatedly suggested itself owing to the limitations in conversational exchanges. Nothing definite is known as regards the patient's ability to do simple problems in arithmetic, to read the hour on a watch, etc. The fact is that opportunity to apply all the desired tests was not available.

The paralytic manifestations cleared up slowly but nevertheless sufficiently to enable the patient to walk about the house with comparative ease. In the upper extremity, also, motion returned to some extent, particularly at the shoulder and at the elbow, so that the forearm could be flexed and the arm adducted and raised to the level of the chin. The patient still continued to have severe convulsions at fairly regular intervals, and each time there followed a complete loss of motor speech of one or two days' duration. After that her word-supply would regain its former proportions. The patient lived in this way several months, and then failed rapidly owing to a sudden aggravation of her cardio-renal inadequacy. She developed pulmonary edema and died May 19, 1911.

Fortunately an autopsy was obtained. It is intended to describe only the lesions found in the brain, the findings in the other internal organs having no immediate bearing on the subject of this communication. The membranes and the surface of the brain presented no abnormal features either over the convexity or at the base. In the latter situation, however, a very marked degree of atheroma was observed in the circle of Willis and in the basilar artery and its branches. Horizontal sections through the entire brain reveal the presence of three distinct lesions in the left cerebral hemisphere. The largest of these, and that which first attracted attention, is a hemorrhagic focus of approximately three months' standing which occupies and completely destroys the posterior two thirds of the outer segment (putamen) of the lenticular nucleus and the corresponding portion of the external capsule, the claustrum and the subcortex of the island of Reil. This lesion is situated in the lower or ventral half of the lenticular nucleus, and is best seen on a horizontal section passing below the corpus callosum and immediately above the floor of the frontal and sphenoidal horns of the lateral ventricle. This plane overlies the anterior commissure and the external geniculate body, and brings into view the three divisions of the lenticular nucleus, the lowermost portion of the pulvinar of the optic thalamus, the corpus subthalamicum and the red nucleus. Above, the lesion apparently does not extend beyond a point situated in the same horizontal plane as the dorsal capsule of the red nucleus. Internally, it involves the ex-

treme posterior angle of the middle segment of the lenticular nucleus, but seems to respect entirely the posterior limb of the internal capsule. Behind and below the lenticular nucleus, however, the retrolenticular and sublenticular divisions of the internal capsule are unquestionably severed almost completely. In the retrolenticular region, the lesion extends as far backward as a line drawn transversely across the hemisphere through the posterior margin of the pulvinar of the optic thalamus. In this situation, the focus remains confined to the subcortical substance of the retro-insular region and spares entirely the periventricular sagittal layers. The lesion involves, at this point, mainly the deep temporal lobule of Dejerine and the superior temporal convolution.

A second lesion is seen in the frontal lobe on a horizontal section passing above the corpus callosum and through the centrum semiovale. This lesion, of much older date, consists of a somewhat triangular apoplectic cyst having three short linear extensions. It is situated in the middle segment of the superior frontal convolution and dips downward into the corresponding portion of the middle or second frontal convolution. On a horizontal section passing below the roof of the lateral ventricle, through the velum interpositum and the dorsal surface of the optic thalamus, the lesion involves the subcortex of the middle or second frontal convolution, and still extends forward into the superior frontal convolution. It is situated, at this point, outside of and distinctly anterior to the hook formed, at the antero-external angle of the lateral ventricle, by the congregating fibers of the corpus callosum. The inferior or third frontal convolution appears absolutely intact.

A third lesion of similar character is seen in the angular gyrus. This focus is hardly larger than a split pea, irregularly oval in outline and is situated in the cortical substance of the angular gyrus, immediately behind the termination of the parallel fissure; in other words, it lies at the junction of the angular gyrus with the base of the second temporal convolution.

In discussing the pathogeny of the various clinical manifestations presented by the patient, it would seem logical to suppose that the periodic epileptiform convulsions were due to the old hemorrhagic focus in the second frontal convolution. This lesion, extending at two points into the actual cortex, was evidently capable of producing considerable cortical irritation. The complete motor aphasia of one to two weeks' duration which marked the onset of the convulsize seizures was due, in all probability, to the pressure exerted at the time, upon the proximal regions, by the effused blood and the perifocal edema. It is interesting to note, incidentally, that this initial aphasia was accompanied by well-

marked agraphia which subsequently disappeared, however, and never returned except as a result of the later paralytic disorder. The lesion being practically confined to the middle segment of the second frontal convolution, this case would seem to confirm, in a certain measure, the views expressed by certain authors regarding the existence of a writing center and its localization in the left second frontal convolution. It will be remembered that valuable communications on the subject have been presented before the society by Dr. Gordinier and by Dr. McConnell.

The evanescent motor aphasia which followed regularly each convulsive attack is more difficult to explain. We still know very little of the changes, vascular or otherwise, which precede, accompany or follow convulsive seizures, whether we have to do with cases of so-called idiopathic epilepsy, or cases in which some focal cortical lesion underlies the occurrence of epileptiform convulsions. In our case, as already stated, we have, as the probable cause of these manifestations, an intracortical hemorrhagic cyst of the second frontal convolution; in itself, however, this lesion cannot be regarded as having determined motor aphasia. The speech defect only appeared as a sequel of the convulsive attacks and rapidly disappeared entirely. It therefore required for its production the intervention of some additional factor having itself but a passing influence. It would seem plausible to incriminate a transitory edema as the cause of the transitory aphasia. This is a mere hypothesis, however, which is offered for want of more firmly established data. The next question which naturally arises is: what region or area is it which has necessarily been affected by the repeated vascular disturbances in order that repeated attacks of motor aphasia should have ensued? One is easily led to admit at once, in accordance with the classic doctrine of aphasia, that the third frontal convolution was the region so involved. This becomes all the more admissible here owing to the actual contiguity of the parts concerned. It may well be that such is the correct interpretation of the clinical manifestations observed, although, properly speaking, we have no proof of it. In this connection, I would like to recall the case of a man who presented a fairly analogous history. The patient exhibited, during a period of about eighteen months, typical Jacksonian attacks which recurred at intervals of five or six weeks and invariably began in the musculature of the right hand and forearm. Each convulsive seizure

was followed by complete loss of motor speech lasting usually one entire day, sometimes however less than half a day. These manifestations having appeared sufficiently distinctive, a trephining operation was undertaken with the hope of removing a circumscribed cortical lesion. The brain was uncovered over the left arm area and although considerable surface was exposed, no abnormal conditions were encountered. The patient subsequently died of some intercurrent affection. At the autopsy, the only cerebral lesion found was a patch of softening in the left hemisphere, absolutely limited to the posterior half of the gyrus hippocampus and to the adjoining portion of the fusiform lobule. The brain was utilized for the study of secondary degenerations, and as serial sections were obtained all the way from the frontal to the occipital pole, I am quite able to state positively that there were no lesions in any other part of the brain.

Whatever may have been the mechanism involved in producing the transitory post-epileptic aphasia in the patient whose case-history I have just reported, and whatever may have been the seat of functional disorder, the fact remains that a permanent impairment of motor speech only appeared after the occurrence of the well-characterized apoplectic attack due to hemorrhage within the lenticular nucleus. This does not at all mean that the lenticular deficit itself is responsible for the aphasic disorder, since other structures were likewise involved, notably the external capsule and the subcortex of the island of Reil. It simply means that a destructive lesion of the lenticular area is capable of producing definite and permanent motor speech defect, independently of any associated involvement of the inferior or third frontal convolution. In our case, this convolution not only seems perfectly intact, but I feel reasonably certain that the projection fibers derived from it, and coursing toward the internal capsule and the basal ganglia, are not intercepted by the lenticular focus. It is possible that lenticular localizations may determine motor aphasia by implicating the adjacent association bundle—the fasciculus uncinatus.

The whole question of cerebral localization still remains deeply entangled owing to the frequent difficulty of correctly interpreting lesions and of accurately comparing the findings in different cases. There are so many factors which must be taken into consideration. The actual case affords a striking example of the many contradictions with which we are often confronted; it furnishes

arguments both for and against the ruling conception of aphasic disorders. We have learned to consider that in right-handed individuals the causative lesion of alexia is a lesion of the left angular gyrus. This alexia was unquestionably present in our patient, and the brain distinctly shows a lesion strictly limited to the left angular gyrus. How easy it would be to assume a causal relationship in this particular instance. Yet, it is a fact positively established that the patient never exhibited the least trace of alexia until the onset of her paralytic disorder, and it is equally undeniable that the focus in the angular gyrus antedated this by a very considerable period. The lesion has all the appearances of a well-defined hemorrhagic cyst of at least a year's existence.

In terminating, it seems to me that the facts furnished by the study of the cases reported in this communication fully substantiate the contentions of Pierre Marie and justify the following conclusions:

1. A lesion of the left inferior frontal convolution in a right-handed individual does not necessarily determine motor aphasia.

2. A lesion of the left lenticular region in a right-handed individual may in itself suffice to produce well-marked and permanent motor aphasia.

AN APPARENTLY NORMAL MAN WITH PERSISTENT ANKLE CLONUS[1]

By Chas. S. Potts, M.D.

PROFESSOR OF NEUROLOGY IN THE MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA

The presence of ankle clonus has always been thought to indicate disease of the nervous system, either organic or functional. Probably the majority of neurologists believe that a persistent clonus indicates organic disease in the course of the pyramidal tracts, while that which is easily exhausted and disappears, or pseudo-clonus, is found at times in hysteria. Some observers, however, believe that a persistent clonus may occur in hysteria. As examples of these divergent views P. Schuster[2] says: "Here I must reiterate that true clonus is met with in hysterical affections. A more common functional affection is the previously mentioned 'pseudo-clonus' . . ."

Purves Stewart,[3] on the other hand, states that true ankle clonus does not occur in hysteria, but that a pseudo-ankle clonus is often met with.

The occurrence, therefore, of persistent clonus in a man without evidence of either organic or functional disease of the nervous system is certainly a phenomenon of great interest and novelty.

The subject in which the condition is present is a man 28 years old and a senior medical student at the Medico-Chirurgical College. He has never had any illnesses, has been normal in every way from childhood, and is one of the leading men in the class. The phenomenon was discovered accidently by one of his fellow students when they were practicing various methods of examination upon each other. He has noticed, however, that from childhood resting the toes lightly upon the ground would at once cause marked clonic movements of the foot.

The ankle clonus elicited in the usual way is very marked on the right side; on the left it is present, but not so marked. The

[1] Shown to the Philadelphia Neurological Society, Feb. 23, 1912.

[2] "Die Deutsche Klinik." Translation published by D. Appleton & Co., p. 202.

[3] "The Diagnosis of Nervous Diseases," p. 330.

Babinski reflex is absent, the toes being flexed. The knee jerks are normal. These phenomena were present at a number of different examinations, and absolutely no other evidence of disease of the nervous system or of any other organs was found.

An explanation of so unusual an occurrence is difficult, although it seems to the writer that possibly it may be due to some abnormal irritability of the muscles. The man does not, however, suffer from muscular cramps or difficulty in walking.

CENTRAL PAIN. A PATHOLOGICAL STUDY OF EIGHT CASES[1]

By John H. W. Rhein, M.D.

PROFESSOR OF DISEASES OF THE MIND AND NERVOUS SYSTEM AT THE PHILADELPHIA POLYCLINIC AND COLLEGE FOR GRADUATES IN MEDICINE; NEUROLOGIST TO THE HOWARD HOSPITAL; VISITING PHYSICIAN TO THE PHILADELPHIA HOME FOR INCURABLES, ETC.

An opportunity to study seven cases of hemiplegia with painful manifestations was afforded through the courtesy of Dr. Wm. G. Spiller, whom it gives me great pleasure to thank for the material of these cases. My own case of hemiplegia makes eight in all, in which the paralyzed limbs were the seat of pain, spontaneous in some and manifesting itself when pressure or movement of the affected limbs was made in others. While these cases more or less confirm the opinion of von Monakow, that the pathology of central pain is yet uncertain, it was possible to draw some important conclusions from a study of a comparatively large number of new cases, only twenty-four cases having been found in the literature of the subject after a careful search.

Case 1. R. F., age 74, presented negative family and previous histories. Two months before admission to the Philadelphia Home for Incurables, on October 4, 1904, without premonitory symptoms there was sudden right-sided hemiplegia involving the face, arm and leg, associated with disturbance of the speech. Upon admission to the Home the disturbance of speech and the facial palsy had cleared up almost entirely.

Upon examination there was partial paralysis of the right arm and leg and slight spasticity in the elbow, shoulder and knee joints. The knee jerk was exaggerated. There was no gross sensory change.

The patient constantly complained of pain on the right side of the body, including the arm and leg. Three weeks before death, she had a second apoplectic attack resulting in spasticity on the left side of the body as well as an increased stiffness on the right side. The knee jerks were increased on both sides and equal. There were ankle clonus and Babinski phenomenon present on the right but not on the left.

[1] Read by title at the Thirty-eighth Annual Meeting of the American Neurological Association, May 30, 31, and June 1. From the Department of Neurology and the Laboratory of Neuropathology of the University of Pennsylvania, and the Philadelphia Home for Incurables.

No gross lesion was found at the autopsy. The basal ganglia on transverse section presented a cribriform appearance on both sides, and sections from the right optic thalamus and the left lenticular nucleus were stained with hemalum and acid fuchsin and by the Weigert method.

A study of these sections showed a space formation, a rarification of the tissue around the blood vessels and some perivascular round cell infiltration. These space formations were very numerous. In the pons there were scattered throughout the whole

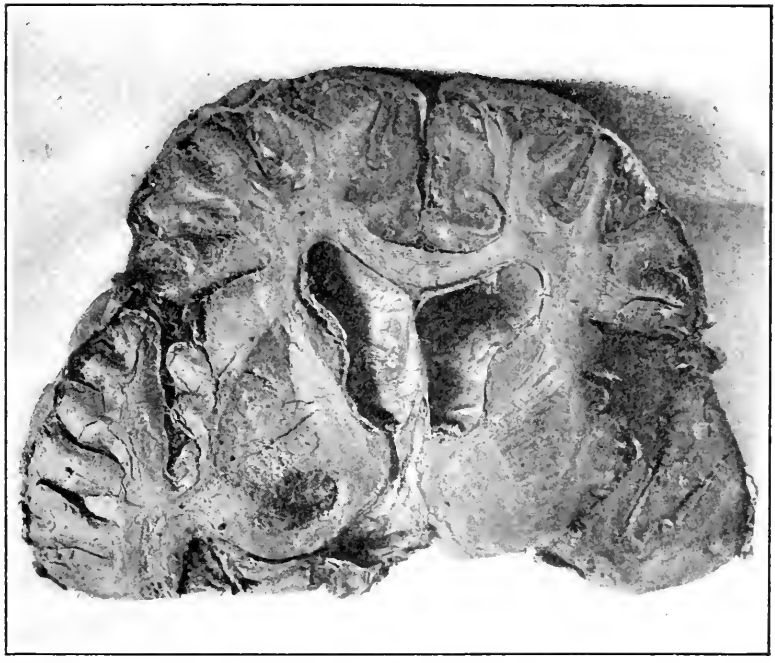

FIG. 1. CASE 2. Hemorrhage into the Left Optic Thalamus Implicating Slightly the Internal Capsule.

transverse section, foci consisting of thickening of the glia. At these places the tissue stains poorly with the Weigert stain. These diseased areas were present in the motor tracts on both sides and in the left lemniscus.

The left pyramid in the medulla oblongata was moderately degenerated.

In the cord from the cervical to the lumbar region, there was marked degeneration of the right crossed pyramidal tract.

CASE 2. F. S., a man of 65 years of age, an engineer, was admitted to the Philadelphia General Hospital January 24, 1900. A month previous to admission he had had an apoplectic stroke,

resulting in paralysis of the right arm, leg and face. The patient was apparently very deaf in the right ear. He seemed to under-

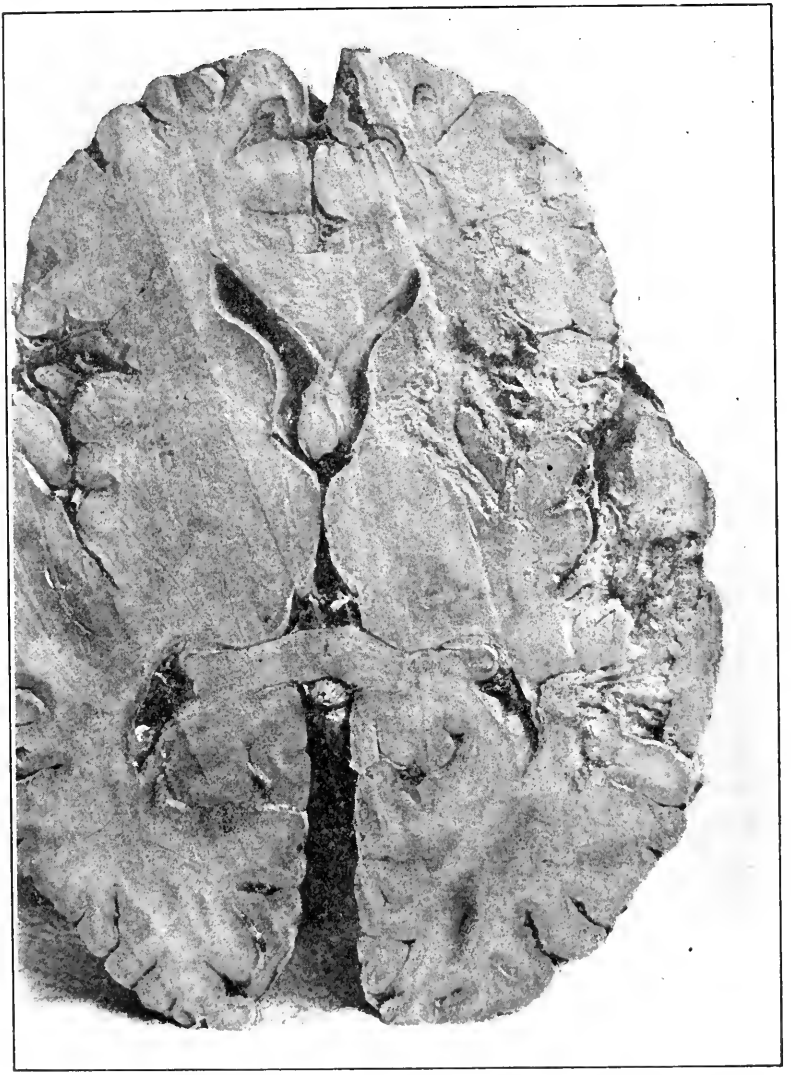

FIG. 2. CASE 3. Extensive Area of Softening in the Right Lenticular Nucleus Implicating the Rolandic Cortex.

stand questions, but could not give intelligent replies. There was no atrophy or other atrophic changes in the right arm. Sensation

apparently was intact and the patient partly withdrew the arm on deep pressure by pain pricks with expressions of pain. Sensation in the legs was apparently normal.

Intense pain in the right arm on pressure or movement was complained of.

A large hemorrhage measuring three quarters by one half inch was found in the left optic thalamus at the level where the third division of the caudate nucleus appears well defined on transverse section. This hemorrhage extended somewhat into the centrum ovale and implicated in part the internal capsule.

CASE 3. S. M., man of 54, was admitted to the Philadelphia General Hospital January 1, 1910, and died February 16, 1910. There was tuberculosis in the family history, but otherwise the family and previous histories were negative, syphilitic infection being denied.

Three years previously he suffered a stroke of apoplexy, resulting in paralysis of the left side, from which he recovered entirely. Two weeks before admission to the hospital he suffered a second apoplectic attack, followed by paralysis of the left arm and leg. Touch and pain senses were not impaired, but temperature sense was impaired in both arm and leg. Sensation on the right side was normal for both pain and temperature. The left side of the face in the lower portion was paralyzed. Passive movements of the left leg produced great pain and he expressed great fear of having the left arm moved. All of the reflexes were increased on both sides. There was no ankle clonus on either side.

The patient died of pneumonia six weeks after admission.

There was an extensive area of softening in the right lenticular nucleus, extending outward and at this level implicating also in part the cortex anterior to the fissure of Rolando.

Microscopic examination of the paracentral regions showed a marked round cell infiltration of the pia on the left side. On the right side there was some perivascular round cell infiltration of the cortex. The intima of the middle cerebral artery was markedly thickened. Examination of the medulla oblongata and spinal cord showed no change when studied by the Weigert stain, but the pyramidal tract on one side showed degeneration by the Marchi stain.

CASE 4. U. F., man of unknown age, admitted to the Philadelphia Hospital April 19, 1909, presented a negative family history. There is nothing in his previous history bearing on the case, except that he was a heavy drinker. Eight years ago, while working in a room at a high temperature, he suddenly became unconscious, and afterwards there was paralysis of his right arm and leg and inability to speak.

On examination the right arm was contracted at the elbow and at the wrist, and the fingers were flexed on the palm. The right leg was held in the extended position and was spastic. The left

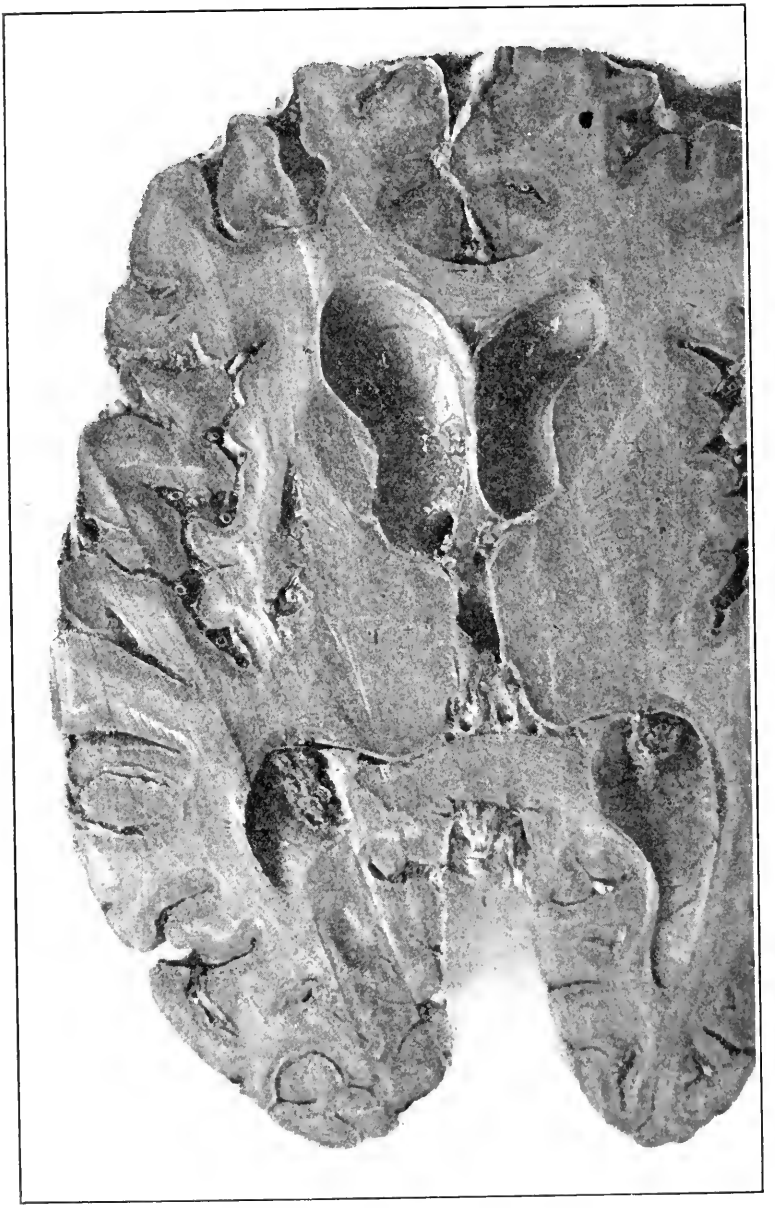

FIG. 3. CASE 4. An Old Cyst in the Left Lenticular Nucleus Involving the Knee of the Internal Capsule.

arm and leg appeared to be normal. The knee jerks were increased on both sides but more so on the right, where there were also an ankle clonus and Babinski phenomenon. Sensation to touch and pain was normal.

The patient complained of sharp pain and also jerking sensations in the right leg.

At the autopsy there was found an old cyst in the uppermost part of the left lenticular nucleus, involving the knee of the internal capsule. There was a round cell infiltration of the pia of the cortex. The pia of the medulla oblongata was thickened and also the seat of round cell infiltration. The right pyramid was degenerated.

In the spinal cord the left crossed pyramidal tract was degenerated as far as the lumbar region. In the upper thoracic region extending to the mid-thoracic region the direct cerebellar tract was slightly degenerated on the left side. In the mid-thoracic region the pia was infiltrated with round cells. The white matter in the anterior part of the cord showed a diffuse round cell infiltration and some vascular change. In the pia in this region there was a marked round cell infiltration. In the anterior horns there was also some perivascular round cell infiltration.

In the cervical region there was a sclerotic area in the anterior portion of the cord on the left side. There was some degeneration also of the posterior roots and a round cell infiltration about the roots. The condition was evidently specific and in the nature of a diffuse meningo-myelitis with involvement of the posterior roots.

CASE 5. M. R., age 53, was admitted April 1, 1908, to the Philadelphia Hospital, with a history of having suffered from an apoplectic attack a few days previously. Upon admission he was completely aphasic and was unable to give any history. He showed by signs that he understood what was being said to him but was unable to articulate. There was no paralysis of the ocular muscles and he wrinkled his forehead equally well on both sides. There was some paresis of the lower half of the face on the right side and complete paralysis of the right arm and leg. The right arm was somewhat spastic, but the right leg was flaccid.

The left leg was slightly spastic. There was no paralysis of the left arm and leg. Babinski phenomenon was present on both sides. It was not possible to obtain a knee jerk on the right side and on the left it was diminished. There was incontinence of both feces and urine. As far as could be determined there was no impairment of touch, pain or temperature sense. There was some apraxia present. When he was requested to touch his nose he touched his chin or when he was asked to close the right eye he closed the left. There was no hemianopsia.

Movements of the right arm appeared to be somewhat painful

and pressure over the calf muscles appeared to give a great deal of pain.

A recent hemorrhage was observed in the left cornu ammonis. There was also a linear cyst in the left external capsule.

FIG. 4. CASE 5. Recent Hemorrhage in the Left Cornu Ammonis and a Linear Scar in the Left External Capsule.

A microscopic study of the spinal cord showed that the crossed pyramidal tract was a little pale by the Weigert stain on one side

and one of the pyramids of the medulla oblongata showed slight degeneration.

CASE 6. M. G., age 68, was admitted to the Philadelphia General Hospital May 1, 1904. The family and previous histories are negative, except that twenty years previous she was seized with an apoplectic attack, which left her paralyzed on the left side. She was admitted to the hospital for contusion of the left knee.

She suffered from a second stroke five years ago, presumably on the left side, though the history does not state definitely. Since this time she has suffered from sharp shooting pains in the left arm and leg, but more so in the arm.

On examination there was diminished power in the left arm. The left hand and forearm were markedly atrophied, especially in the hand. The biceps, triceps and wrist jerks were prompter than normal. Touch and pain senses were preserved. She was unable to move the left lower leg, except at the ankle and toe joints. The knee jerk on the left could not be obtained. Ankle clonus and Babinski phenomenon were present on the left.

Sensation for touch and pain was preserved, and it was stated that she could feel more distinctly on the left side of the body than on the right. Power in the right arm and leg was preserved.

She not only complained of spontaneous pain in the left arm and leg, but there was tenderness to pressure over the bony parts in these localities, though present also over the soft parts.

On July 28, 1904, a flap was made from the median nerve and inserted into a longitudinal incision in the sheath of the musculospiral nerve. Some improvement in the power of extension in the fingers and wrist was noted. On November 16, 1907, she suffered from a clonic convulsion, mainly limited to the right arm and leg, and died a few days later.

There was present at the autopsy an old scar in the right optic thalamus, extending into the internal capsule. There was also a small hemorrhage beneath the floor of the descending horn of the lateral ventricle at about the junction of the occipital and temporal lobes.

In the medulla oblongata one of the pyramids showed degeneration by the Weigert stain.

In the cervical region of the spinal cord, the right direct pyramidal tract and the left cross pyramidal tract were degenerated. This degeneration did not extend as far as the lumbar region.

CASE 7. G. S., age 69, was admitted September 16, 1904, to Philadelphia General Hospital and died March 28, 1905. Family and previous histories were negative.

For two years previous to admission he had been subject to attacks of vertigo and had been a heavy drinker for years. On the day of admission he had an attack of vertigo and fell, since which time he had been unable to walk.

On admission there was slight paralysis in the lower portion

of right side of face. Motion and resistance to passive movements were good in the right arm and leg. The left arm was contractured and spastic and the grasp was very poor. Sensation to touch and pain was better on the right side than on the left. Motion and resistance to passive movements were poor in the left leg. Both knee jerks were exaggerated, and ankle clonus and Babinski phenomenon were present on both sides. Sensation to touch and pain was diminished on the left side. The left leg was spastic and the bladder sphincter was incontinent.

He complained of sharp shooting pains in all his limbs, especially in the legs. There was also pain on pressure in all the limbs over the nerve trunks, especially over the legs.

On December 22, 1904, he suddenly noticed that he could not use his right hand, which upon examination was found to be paretic. There was noted a week later some difficulty in phonation. There was no loss of sensation on the right side.

No gross lesion was found at the autopsy. The pia of the paracentral, frontal and occipital regions, as well as the pia of the pons, medulla oblongata, and spinal cord, was slightly infiltrated with round cells and the blood vessels were thickened.

In the cortex there was some perivascular round cell infiltration.

There was an area of softening in the pyramidal tract on one side of the pons, causing descending degeneration.

This case was reported in a paper by myself, published in the *American Journal of the Medical Sciences,* May, 1906.

Case 8. E. J., was admitted to the Philadelphia General Hospital on June 12, 1903. There was no history of paralysis or nervous trouble in the family and he claimed to have had no disease previous to the present trouble, denying specific history.

Several weeks before admission he suddenly became unconscious. Upon regaining consciousness the right arm and leg were paralyzed and he was unable to speak distinctly.

On examination the right arm and leg were entirely paralyzed. He moved his left arm and leg but with some apparent loss of power. Sensation for touch and pain was lost and the temperature sense impaired on the right side of the body, extending one inch to the left of the median line and including the right arm and leg.

Hemianopsia was absent. The knee jerks were increased very much on both sides, but more so on the left side. There was a Babinski phenomenon on the right but no ankle clonus. There was apparently some motor aphasia.

The patient complained of great pain in the right arm and leg when moved passively, though they could be touched or pressed with impunity and no pain was complained of when the limbs were at rest.

There was a hemorrhagic scar in the left lenticular nucleus and

one in the external capsule. There was also sclerosis of the cerebellar lobe.

The middle portion of the foot of the peduncle on one side was markedly degenerated.

Summary.—In four of these cases the pain was spontaneous (cases 1, 4, 6, 7). In case 1, there was no pain to pressure, the pain being entirely independent of pressure or movement of the limbs. The multiplicity of the lesion in this case makes it impossible to draw any definite conclusion, though it must be remembered that the basal ganglia were the seat of a widespread lesion of a minute character.

In case 4, the pain was also spontaneous and there was no note of pain on pressure. The lesion was in the lenticular nucleus.

In case 6, the pain was not only spontaneous, but when the bony parts were pressed upon there was also complaint of pain. There was an old scar in the contralateral optic thalamus.

In case 7, sharp shooting pains were complained of as well as pain on pressure over the nerve trunks. In this case the lesion was one of cerebrospinal lues, and the meningeal irritation at the roots may have been the cause of the pain.

In four of the cases the pain was only manifested upon movements of the limbs or pressure.

In case 2, there was pain in the right arm on pressure or movement. The left optic thalamus was the seat of a hemorrhage, which implicated also the internal capsule.

In case 3, passive movements of the left leg gave great pain. The lenticular nucleus was the seat of an area of softening which involved also the motor cortex.

In case 5, pressure over the calf muscles and the right arm was painful. A recent hemorrhage was seen in the left cornu ammonis and a linear scar was present in the left external capsule. Some degeneration of the pyramidal tract on one side could be seen by the Marchi method.

In case 8, passive movements of the right arm and leg gave pain, though pressure was painless when the limbs were at rest. The lesion was in the left lenticular nucleus and in the external capsule.

The painful conditions found in these cases were independent of contracture. The possibility of the presence of neuritis as an explanation of the pain must be remembered, though in these cases above cited it was not suspected.

An analysis of these cases makes it apparent that there is no one pathological lesion to explain pain of central origin.

In three of the cases (cases 8, 4, 3) the lesion was in the lenticular nucleus; in two of the cases (cases 2, 6) an old hemorrhage was found in the optic thalamus; in one case (case 7) there was a widespread specific lesion, causing numerous foci of degeneration; in one (case 1) the optic thalamus and lenticular nucleus as well as the pons were the seat of an arterial lesion causing small foci of degeneration; and finally in one case (case 5) the cornu ammonis and the external capsule were the seat of a hemorrhage.

In case 4, the presence of a diffuse myelitis and meningeal infiltration associated with involvement of the lenticular nucleus excludes the possibility of attributing the pain to lesions of the white matter of the brain alone. The meningeal and root implication could readily explain the sharp pain and jerking sensations in the leg. The case is useful, however, in this study as illustrating what I take to be not an infrequent cause of pain in hemiplegia, namely syphilis, the lesion causing the palsy originating in the same process which gives rise to the round cell infiltration.

In case 7, there was a widespread arterial change of specific origin, giving rise to small foci of softening and causing the double hemiplegia. There was round cell infiltration of the pia of the cord though moderate, which may not have been sufficient in itself to cause enough irritation of the roots to give rise to the pain in the leg, but it is perhaps justifiable to assume that some undiscovered foci of softening was present in the sensory tracts and that thus the pain could be explained. It is assumed that irritation of the sensory tracts may cause pain referred to the periphery.

There was no other sensory disturbance in five of the cases (1, 2, 4, 5, 6). In two of the cases, however, there was loss of sensation to pain and touch (7, 8); and in one of the cases a loss of temperature sense (3).

Central pain described by Oppenheim (1) as analgesia dolorosa when anesthetic areas are the seat of spontaneous pains, according to this observer, is of frequent occurrence. At the same time the observations in literature with autopsy, where pain has been of central origin, are not very numerous. While the observations of Morot (2) and Duchek (3), reported respectively in 1785 and

1864, show that this condition has been recognized for a long time, the first analysis from a pathological standpoint of the cause of central pain was made by Edinger (4) in 1891. Previous to this date, however, several cases had been reported.

Lauenstein (5) in 1887 reported a case of athetosis, associated with severe pain in the hand and forearm which were intensely red and felt cool. There was a fresh hemorrhage in the right optic thalamus the size of a bean.

In 1883 Greiff reported a case of post-hemiplegic chorea, residual dementia and left-sided paresis in which there was burning pain in the left arm and leg, which were hyperesthetic and painful to pressure. There was a focus in the right optic thalamus, one at the base of the right occipital lobe, one in the cerebellum, and a small focus in the left upper part of the pons, the last, however, in his opinion not causing any symptoms.

Reichenberg (7) in 1897 described a case of paralysis of the left side of the body, hemianopsia and severe pains beginning four days after the onset of the palsy. The lower part of the arm, the trunk and the left leg were partially anesthetic and there was also some hyperesthesia of the face and left upper arm. Softening in the right hemisphere was found, involving a large part of the lower parietal lobe and implicating also the posterior part of the internal capsule and the optic radiations in their dorsal part.

Henschen (8) in 1890 described a case of pain in the right arm followed by palsy and later by choreiform movements of the thumb and associated with hemianopsia. There was a small hemorrhage in the optic thalamus in the vicinity of the internal capsule and optic tracts. Since Edinger's paper a few observations have been made in the literature on the subject, namely, the cases of Oppenheim and Koehler (9), Handford (10), Biernacki (11), Schaffer (12), Touche (13), Zawadsky and Bregman (14), Leyden (15), Economo (16), and Holmes and Head (17). To these may be added those cases described by Roussy under the name of the thalamic syndrome, consisting of hemianesthesia to all forms of sensation, hemiataxia, slight hemiplegia, hemianopsia, choreiform movements, and severe pains in the paralyzed limbs. Cases of this sort have been described by Dide and Durocher (18); Dejerine and Roussy (19); Roque, Chalier and Cordier (20); Long (21), and Paillard and Lelievre (22).

In Dide and Durocher's case, the lesion was in the caudate

nucleus and in the superior third of the thalamus, both of recent date, and there were two older lesions in the thalamus, bordering on the posterior part of the internal capsule.

The lesions in the three cases of Dejerine and Roussy permitted them to conclude that the characteristic seat of the focus in the thalamus syndrome was in the external nucleus and in a situation which encroached upon the internal and middle nuclei of the thalamus, and which only invaded a part of the posterior segment of the internal capsule.

In the case of Roque, Chalier and Cordier there was a hemorrhage into the posterior part of the right optic thalamus. In one of Long's cases there was a focus in the retro-lenticular segment of the internal capsule, and one in the marginal gyrus; in the second case a lesion occupied the external nucleus of the thalamus and the pulvinar, besides which there were numerous foci in the occipital lobes, the central part of the left hemisphere, the pons, and in the medulla oblongata.

In Paillard and Lelievre's case there was a hemorrhage in the retrolenticular region invading the posterior part of the internal capsule. The posterior and external part of the optic thalamus was also invaded.

These cases can be grouped pathologically as follows: (1) Lesions of the optic thalamus (Dide and Durocher; Roque, Chalier and Cordier; Greiff; Lauenstein; Biernacki; Long; Eisenlohr; Edinger; Henschen; Holmes and Head; Paillard and Lelievre); (2) lesions of the caudate and lenticular nuclei (Zawadski and Bregman); (3) lesions of the pons (Morot, Duchek, Economo); (4) lesions of the parietal regions (Oppenheim and Koehler, Reichenberg); (5) lesions of the frontal convolutions (Touche, Handford); (6) widespread degeneration involving the lemniscus (Schaffer); (7) lesions of the medulla oblongata (Mann's (23) clinical case).

Pain in disease of the nervous system, excluding affection of the nerves, has been looked upon as originating in irritation of the meninges or of the spinal roots.

Generally speaking the consensus of opinion has been against the view that implication of the central nervous tissue when irritated can cause painful manifestations.

At the same time it has been assumed by certain authorities (Zawadski and Bregman, Reichenberg, Nothnagel (24)) that cen-

tral pain may be due to irritation of the sensory fibers in the internal capsule.

Just what the mechanism of the production of central pain is has been a matter of considerable dispute.

Lewandowski (25) did not believe that it was certain that peripheral irritation could be excluded in these cases or that the pain was simply referred peripherally. Goldscheider (26) on the contrary looked upon these cases as resulting less from irritation of the white matter of the central nervous system than from implication of the gray nuclei. Anton (27) was not sure what fibers were implicated in central pain, but looked upon the presence of subjective sensations and paresthesia occurring in lesions of the parietal cortex as suggestive in localizing painful sensations (see Handford's case).

Economo believed that there were fibers in the lateral part of the lemniscus which conveyed not only pain sensations to the skin but to the bones and muscles, and that these fibers are in the "spino-tektalen," as well as in the "spino-thalamic" tracts. He believed that injury to these pain tracts (Schmerzbahnen) was the cause of central pain.

The lesion may be in the corona radiata at the junction of the ascending frontal and second frontal convolution (Touche), or in the frontal region (Ballet (28)), or in the right parietal region (Oppenheim, and Koehler, and Reichenberg), or in the paracentral region (Handford).

According to von Monakow (29) pain occurs in foci situated in the paracentral region or in irritating lesions in the posterior segment of the optic thalamus. Anesthesia dolorosa, he states, is caused by lesions of the pons. He admits, however, that the anatomical substratum for conditions of sensory "Reizerscheinungen" is not yet certain.

In this connection it is interesting to note the association of pain with organic hemichorea and athetosis as in the cases of Touche, Henschen, Greiff, Lauenstein and Edinger.

While there is no doubt that lesions of the parietal and motor cortex, as well as of the pons and medulla oblongata (Mann), may cause central pain, the chief seat of lesions appears to be the basal ganglia and mainly the optic thalamus. The cases of Greiff, Henschen, Holmes, Edinger, Biernacki and Eisenlohr were all instances of this kind, as well as those cases of the thalamic syndrome above cited.

On the other hand it may occur when the optic thalamus is intact as in my own cases and that of Zawadski and Bregman, in which the lenticular nucleus was involved by a lesion implicating at the same time the internal capsule. It may be the result of a widespread lesion, as in the case of Schaffer, where the focus involved the pulvinar, the left lingualis and fusiform lobes, the cuneus, the corpora quadrigemina and the cornu ammonis, as well as the "Schleifenschicht." Secondary degeneration of the "Längsbundle," part of the splenium, contralateral tapetum and descending degeneration of the pyramidal tracts from a focus of softening in the right pyramid of the medulla oblongata were also present. He concluded that the lemniscus is related to central pain.

Though there is little in the study of the lesions in these cases cited, as well as in the cases reported in this paper, to suggest an entirely satisfactory explanation for central pain in all the cases, it seems not improbable that there are separate tracts for pain as there are tracts for other forms of sensation.

Where these are located is a matter of conjecture. It is significant that lesions in the motor regions (Hoppe's (30) cases) and in the parietal region gives rise to parasthetic and painful manifestations, also that in some forms of hemiplegia parasthesia may exist without loss of sensation.

That pain fibers are separated from tracts transmitting other forms of sensation seems further probable when we note that in my cases no other form of sensory disturbance occurred in five instances, while the loss of sensation of pain and touch occurred only in two cases, the lesions found being lues in one and scars in the left lenticular nucleus and the external capsule in the other. In one other case the temperature sense was lost, the right lenticular nucleus and the brain substance of the Rolandic cortex being involved. The lack of uniformity of the lesion makes it impossible in these cases to draw any conclusions as to the location of pain tracts, granting their existence.

In this connection the conclusions of Head and Holmes (31) are interesting. They believe that the "optic thalamus contains the terminations of all sensory paths; here the sensory impulses are grouped afresh and redistributed in two directions, on the one hand to the cortex, and on the other to the gray matter of the optic thalamus itself. It contains a mass of gray matter, the essential organ of the thalamus, which forms the center for certain

fundamental elements of sensation. It is complementary to the sensory cortex, and exercises different functions in the production of sensation. The lateral part of the optic thalamus is the organ through which the cortex can influence the essential thalamic center, controlling and checking its activity. The excessive response to affective stimuli, so prominent a feature of lesions in this situation, is not due to irritation but to removal of cortical control."

It seems very probable that the optic thalamus is a great sensory receiving and distributing center. Pain fibers no doubt are connected in some way with these centers, but a study of my cases would lead me to believe that pain fibers exist also in the nerve tracts between the cortex and optic thalamus, and possibly also in connection with the Rolandic cortex as well as other regions of the cerebrum.

Another element may be considered in the discussion of these cases. The cause of the pain may not be directly due to the principal lesion described. In most of the cases there is also an arterial sclerosis which it is reasonable to look upon as a possible etiological factor in causing irritation or disturbed nutrition in fibers whose physiological function is concerned with painful sensations.

Conclusions.—It seems justifiable to conclude that central pain may be found associated with lesions in many localities, but the cases in which the optic thalamus is implicated are in the majority. Serial sections should be made in all cases before definite conclusions may be drawn. This was not practical in my cases, as most of the material was preserved for teaching purposes as gross specimens.

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POLIENCEPHALITIS SUPERIOR OF WERNICKE, WITH REPORT OF A CASE

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Encephalitis has been described either under this title or under the title of phrenitis since early in the seventeenth century, but not until Virchow began his pathological work in the first half of the nineteenth century was any extensive progress made in the knowledge of the condition. Since then many types of encephalitis have been described based on the pathology.

In 1881 Wernicke in the "Lehrbuch der Gehirnkrankheiten," described the type which he called acute hemorrhagic poliencephalitis superior, the pathology of which was the formation of numerous punctate hemorrhages with acute inflammation about the Sylvian aqueduct and the third and fourth ventricles. He reported at this time three cases, though these were not the first reported of this type, since in 1875 Gayet had reported a case, but apparently had not recognized its complete identity. He called his case "affection encephalique." In 1892 Boedeker found eleven cases reported, three of a non-alcoholic origin and eight alcoholic. Of Wernicke's three cases, two were alcoholic and the other was in a young girl who had attempted suicide with sulphuric acid some two months before the onset of the disease.

Acute hemorrhagic encephalitis, taken in its widest sense is in the great majority of cases caused by infection. Many cases have been reported during epidemics of influenza. It has also been seen following measles, scarlet fever, pneumonia, erysipelas, whooping cough, and in a case reported by Putnam it developed after an attack of mumps.

Oppenheim believes that post-diphtheritic paralysis is frequently caused by hemorrhagic encephalitis. It has been observed after ulcerative endocarditis and in middle ear suppuration, here often associated with serous meningitis. The acute poliencephalitis of Wernicke may be divided into two general classes according to the etiological factor involved; one class being due to long-standing ingestion of alcohol, and the other to various factors,

frequently influenza. The onset of the acute symptoms is usually rapid after a short premonitory spell of headache, vertigo and some irritability, though even these premonitory signs may be wanting. The patient then becomes in turn dazed, unconscious and stuporous, though the stupor is seldom deep enough to abolish the pupillary or tendon reflexes. The temperature is variable, elevated moderately, or at times sub-normal; the coma may deepen and death ensue in from twenty-four hours to several days without return to consciousness, or the disease may run a more protracted course of many weeks or even months.

In Gayet's case, five months passed from the time of the onset until its fatal termination. When the course of the disease is protracted the fever is usually irregular and symptoms of paralysis appear in the form of monoplegia or hemiplegia. There is usually a cerebellar ataxia with tremor, and at times difficulty of speech. The ocular signs consist of palsies of extra-ocular muscles, ptosis, nystagmus and alterations in the optic disc, varying from a papilledema to an atrophy of the papillo-macular bundle in the chronic alcoholic cases, and as a result, of course, vision is more or less affected. It is not unusual to have the poliencephalitis of Wernicke descend the cord and become a poliencephalomyelitis. Such cases have been reported by many, three cases in the *Boston Medical and Surgical Journal* for 1903 by Taylor being especially interesting. Wilbrand and Saenger have in 1900 analyzed twenty cases, alcoholic in origin, of Wernicke's encephalitis; ten had ptosis and in three cases no mention was made of the lid condition. In all the cases except two in which no mention was made of the condition of the extra-ocular muscles, those muscles were variously involved, from the palsy of a single muscle (external rectus) to a practically complete ophthalmoplegia, and the pupils varied from normal reaction to immobility. The fundus changes varied from papillitis to a pallor of parts of the disc. The post-mortem changes were those as described above.

Schroeder reports one typical case which at necropsy showed minute hemorrhages and attempts at phagocytic repair, similar to those found in other inflammatory conditions. He believes the condition was caused by vascular change following chronic alcoholism, possibly similar to the hemorrhages of anaphylaxis. In the alcoholic type the early symptoms may be mistaken for delirium tremens, usually occurring in middle-aged chronic alco-

holics, and it is in this type that the typical pallor of the papillo-macular bundle is usually found. Of cases non-alcoholic in origin there are but few in the literature. Gayet's case followed three days after a boiler explosion, in which the patient, a man twenty years old, did not suffer bodily injury. There was present double third-nerve palsy with ptosis, weakness, hemiplegia, and death five months after the accident. Wernicke's case, as has already been mentioned, followed two months after the attempt of suicide by sulphuric acid, with death twenty days after the onset of symptoms. Other cases, non-alcoholic in origin, have been reported by Salomonsohn, by Luce where the condition was a complication of miliary tuberculosis, and by Murawieff, who reports a case three months after influenza complicated by a sarcoma of the precentral gyrus. Zingerle reports a case with chronic digestive disturbances and an abdominal tumor of long standing. In *Brain* for 1897 Wiener reports a case of acute hemorrhagic encephalitis which seems to be more of the type which Strümpell has described, though there are certain conditions which suggest inflammation of the periventricular region. Since Wernicke and Strümpell recognize a difference only in the localization of the lesion, it seems probable there is very often a mingling of the two conditions.

In the *Journal of Nervous and Mental Disease* for 1894, Wolfe reports a typical case of Wernicke's encephalitis, the paper having been read before this Society, January 22, 1894. It was in a male thirty-nine years of age, who after many attacks of vertigo, numbness in the limbs and finally diplopia, sought medical advice. The temperature was found to be one hundred, eyes immobile and fixed in mid-position, loss of power and tone of the facial muscles and alterations of speech, partial ptosis, slight exophthalmos and loss of smell and taste. No changes in the fundus, vision being $\frac{6}{9}$, due to the moderate hypermetropia. He complained of a "pins and needles" sensation in both arms and legs. In four weeks after first being seen, the symptoms had very nearly cleared up. No symptoms of influenza infection had preceded the attack, though it occurred during an epidemic of the disease, and Wolfe believes this the possible etiological factor. The prognosis as first given by Wernicke was always grave, as he believed it usually fatal in from eight to fourteen days. That this is not always justified several cases on record show: notably this one of Wolfe's and the one which I report in this paper.

H. Y. P., age seventeen, came to me referred by his physician on April 12, 1906, giving the following history:

He had been in good health until late in January of that year, when he had a severe attack of influenza which lasted about three weeks. After this he felt fairly well until the middle of March, when he began to have difficulty in moving his limbs, as they were stiff and motion painful. This trouble seemed to develop gradually. Three weeks before his visit the soles of his feet became very sore whenever he stood on them. He said they felt like raw meat. This pain was only when standing or walking, and disappeared on lying down. He had some little headache. On Saturday, April 7, and the following day, his vision seemed a little dim to him. He went to his work on Monday, but his vision became so bad he had to return home, since which time it seemed to have remained unaltered.

On examination the central vision of the right eye was $\frac{3}{35}$ and of the left eye $\frac{1}{35}$. The pupils were semidilated, each being six millimeters in diameter, and responded very sluggishly and slightly to light, but promptly to accommodation and convergence.

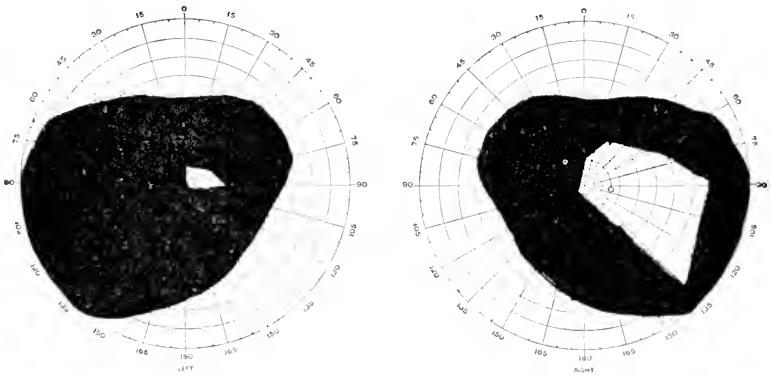

FIG. 1. Visual Fields of H. Y. P., April 12, 1906.

His visual fields as shown by the charts were very markedly cut, the left field being obliterated, only a small triangle of the right field remaining in the left eye, and a much larger patch in the corresponding portion in that of the right eye. There was some ptosis with full and equal extraocular rotations, except upward motion which was decidedly limited. There was some pain on pressing the eyeballs back in the orbits. Ophthalmoscopically, both media were clear and what fundus alterations were present were confined to the right eye, the veins being rather full and the disc very hyperemic with veiled margins but not swollen; the left disc was normal.

His patellar reflexes were decidedly diminished, his station

swaying; there was no clonus. A diagnosis of acute retrobulbar neuritis was made and he was advised to enter the University Hospital, which advice he accepted and was admitted the same afternoon. He was placed in bed on a light diet, and given mercurial inunction, sodium salicylate, and sweats with free purgation. Dr. G. E. de Schweinitz saw him with me late the same afternoon, and agreed as to the probability of the diagnosis. His temperature on admission was 97.4, pulse 80, and respirations 20. The treatment as outlined was continued with the addition of a fly blister on the temples until the third day after admission when all medication by the mouth was stopped. His vision gradually fell until on the fifteenth, three days after admission O. D. was blind and O. S. had but scant light perception. Both discs were then hyperemic but not swollen, his weakness increasing and some headache and vomiting coming on. Dr. Wm. G. Spiller was asked to see him. The following is a transcript of the notes dictated by Dr. Spiller:

"He is weak in all limbs, not excessively, and is not paralyzed in any part. The sensations of touch and pain are normal in the face. The facial nerve supply is normal on each side. The tongue is normal. Muscles of mastication are normal in each side. He hears the voice clearly in each ear when the other ear is closed. He has almost absolute paralysis of upward associated movements of the eyeballs. The left eyeball possibly may be directed a little upward either voluntarily or in following the fingers, but the movement is questionable. Downward movement or movement to either side is well performed. Convergence is imperfect. The grasp of each hand is somewhat feeble. Sensations of touch and pain are normal in all the limbs and face. The muscles are not tender to pressure anywhere. The biceps tendon reflex is present but is weak on the right side and uncertain on the left. The triceps tendon reflex is not obtained on either side. He can move his lower limbs freely at all parts and with very little weakness. Patellar tendon reflex and Achilles tendon reflex are lost on each side, even with reinforcement. Babinski reflex is not present on either side. The toes, including the big toe, are flexed. His gait and station are good even with his eyes closed. At present there is no rigidity of the muscles anywhere."

Dr. Spiller, relying on the ocular findings, and his own examination made the diagnosis of acute hemorrhagic poliencephalitis superior. On the following day the vision had slightly improved and there was light perception in each eye. The vision continued to improve and in the next twenty-four hours the man could count fingers at a meter in each eye. On Wednesday, the eighteenth, the following day, he complained of a severe headache in the frontal region and there was nausea and some vomiting. This lasted for three days, during which time very little nourishment

was taken. His ocular condition had continued to improve steadily and by the nineteenth the discs were much clearer, upward rotation was nearly normal and convergence was stronger. Ten days later his vision was $\frac{4}{35}$ in each eye. He left the hospital May 3 with O. D. $\frac{6}{45}$ and O. S. V. $\frac{6}{30}$, upward rotation and convergence normal, discs rather pale. He was placed on strych-

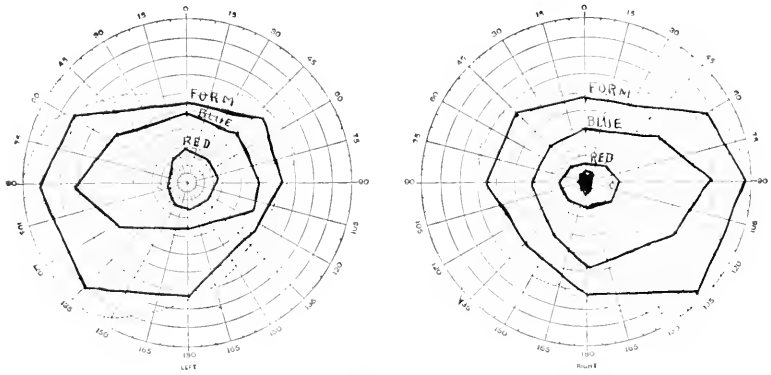

FIG. 2. Visual Fields of H. Y. P., May 3, 1906. Form, blue, red and green not seen. Absolute control scotoma for red in O. D.

nia sulphate and Blaud's pills. When he left the hospital his form fields were full with concentric contraction for color, with a central scotoma for red in the right eye and with no recognition of green. In a week the scotoma had disappeared and the form fields were full; blue and red being still concentrically cut and green recognized at fixation only. By early June the fields were entirely normal as well as the central vision. The pallor of the discs gradually increased and by August they presented the appearance of a complete atrophy, but central and peripheral vision was normal, a condition which still continues.

Society Proceedings

PHILADELPHIA NEUROLOGICAL SOCIETY

APRIL 26, 1912

The President, DR. JOHN H. W. RHEIN, in the Chair

CEREBELLAR DYSERGIA FROM MALARIAL THROMBOSIS

By Tom A. Williams, Washington, D. C.

A journalist, aged thirty-eight, was referred, 1909, by Dr. Roy for diagnosis of an ataxia which he had had for years and which had latterly caused him to fall down in the street and much interfered with correct typewriting.

Married, with four children, he had had no significant diseases except gonorrhea at twenty-five and the usual zymoses of childhood, but in Cuba during the war he had pernicious malaria. On his return the following year, his hands and feet felt numb and the dysmetria which he now suffers began. Recently his speech has become slow, but neither slurring nor thick. A slight diplopia and strabismus are said to have resulted from a blow when a boy. A medical friend states that the patient could not see so well to his left. Now he complains of seeing less well to his right. He says that the sight gradually dimmed and was lost entirely some weeks ago. Since then it has improved. Actually he sees quite well. For a long time he has felt a dead weight in his back and a soreness in the spine. These symptoms vary and are worse when he is constipated, also when he is clumsier and more depressed. He is miserable and finds his temper almost uncontrollable. He is so tired at night as almost to desire suicide, and feels desirous of stopping work and sleeping. No malarial parasites were found a month before Dr. Williams saw him.

Viscera were not found abnormal. Reflexes: patellar and Achilles $++$; radial R. $>$ L. Triceps, feeble. Maxilla $+$. Abdominal absent. Cremaster R. $>$ L. and controllable. L. only momentary. Plantar feeble flexion with tendency to extend, sometimes especially on left. Pupils react briskly but only slightly to light, better to accommodation. Micturition is normal, potency is good.

Speech is slow, drawling, monotonous. Facial and tongue movements are not impaired. No nystagmus. Grip, pull and push are strong. No lateropulsion. No rigidity of neck or limbs or hypotonia. No fine tremor. Can rotate with vertigo. But in walking his movements are slightly swaying, with somewhat wide base, though without hesitancy or marked intention tremor. Ataxia not evident except slightly in heel to knee, L. $>$ R. and in approximating his forefingers after spreading the arms apart. The test is as well performed when the eyes are closed. Diadokokinesia impaired, especially in left hand. Chair mounting and leaning back tests are negative; but the *line test is strongly positive.*

Noguchi-Wassermann test is negative. There is no lymphocytosis of the cerebro-spinal fluid.

Sensibility.—The only objective abnormality is a diminution to diapason perception over external malleolus; but subjective sensations of numbness in fingers and toes are frequently present. Special senses normal. Optic disc normal.

Psyche.—He seems exalted and jovial, but is accurate and rapid in performing various tests of perception and intelligence.

Diagnosis.—The dysergic intention tremor, slow speech and exaggerated reflexes with the paresthesia make one think of multiple sclerosis, especially with the history of blindness recovering so rapidly. But against this are the very slight progressiveness of the symptoms, the absence of nystagmus and plantar extension. In view of the history, the syndrome is best accounted for on the ground of the multiple thrombosis of intracranial vessels which occurs in pernicious malaria, as it is called, and the necroses resulting from these have left the impaired efficiency now shown by the patient's cerebellar apparatus.

AN UNUSUAL CASE OF DYSTROPHY, OR DISEASE (INSULAR SCLEROSIS) OF OPTIC AND PYRAMIDAL SYSTEMS

By Tom A. Williams, Washington, D. C.

A German-American clerk, aged 31, childless, although four years married, for two years and a half has been unable at intervals to manage his legs freely, and tiring latterly to the point of incapability on walking four blocks. A few months before this, an attack of vertigo lasted a week; it was recovered from completely. He recollects a ptosis in 1907. About two years before this, the right eye became so blind that it could regard the sun without pain. This condition improved; but he does not know when. Family history discloses no nervous defect.

Previous history: He has had rheumatism, typhoid, pneumonia, gastric fever and malaria, also chancres, but without sequelæ.

He has never been healthy, and never desired athletics or active play, but liked to watch games or play cards. His life has been a happy one, and he has drunk moderately.

Examination.—When seated he is happy and at ease; but when walking he is apprehensive of falling. The deep reflexes are exaggerated. The plantar reflex is in extension. The adductor response is forcible. The Mendel reflex spreads more and more actively on the left than on the right. The organic reflexes are impaired, neither bladder nor rectum being altogether continent for the last few months. In walking, he stamps on the heels and there is some ataxia, but spasticity is not evident, the motor power is strong, and there is no tremor. The sensibility is not impaired, even attitude and deep pain being readily distinguished.

The left pupil contracts to light somewhat slowly, but the contraction is well maintained. The right contracts quickly, and hippus is marked; its contour is irregular. There is no nystagmus. Convergence is defective, and there is diplopia when an object approaches within seven inches on looking to the right, at one foot on looking to the left, at eighteen inches on looking down. There is optic atrophy, more marked on the right disk. Hearing is not defective.

The Wassermann reaction is negative. The spinal fluid contains 2.5 cells per cubic millimeter. The butyric-acid test shows no increase of protein. The psyche is somewhat expansive but shows no intellectual defects.

Diagnosis.—The history of the case strongly indicates lues; but the blood reaction and the absence of intrarachidian lymphocytosis negative this.

Insular sclerosis must be considered: and neither the history nor the clinical findings can exclude it. In its favor, are the progress of the disease by sudden exacerbations, the improvement after each of these, the optic atrophy.

Against this diagnosis, is the absence of tremor and nystagmus, speech defect and minor sensory changes, which are now frequently found in insular sclerosis.

Since the work of Raymond and G. Rojas, it is believed that insular sclerosis is the result of an inflammatory process of a disseminated type. Any part of the nervous system may be affected. It is clear, too, that any part may escape, but that likelihood of implication is necessarily proportionate to extent of ramification of the functional system. Hence, it is unusual that there is escape of the equilibrational fibers of the cerebellar system in the mid-brain and inter-brain. If this case is one of insular sclerosis, it is one where they seem to have escaped, as indicated by the absence of nystagmus and jerky speech, which is the more strange in view of the implication of the oculo-motor apparatus, just headwards of them.

Dr. Spiller asked Dr. Williams to sum up the features of the case on which he based his diagnosis.

Dr. Williams replied that the man had ataxia, vertigo for a week which disappeared, blindness of right eye, previous history of many infections. The reflexes were exaggerated, but no marked spasticity. Marked ataxia but no loss of sensibility, even the attitudes being completely certain. No nystagmus. Defect of convergence of the eye. Negative Wassermann.

Dr. Spiller said spinal syphilis must be considered. The symptoms suggested a diffuse process. A negative Wassermann does not exclude syphilis.

Dr. Williams replied that at first he was strongly of the opinion that it must be a case of syphilis, and told the man's doctor so. Then tests were made, with negative results. The history of the case strongly indicates lues.

Dr. Alfred Gordon presented a brain from a man who died suddenly.

Dr. D. J. McCarthy read a paper on Hemosiderin Infiltration of the Wandering Cells of the Pia-arachnoid.

Dr. E. B. Krumbhaar said that he could add to Dr. McCarthy's findings the evidence of another example of a similar phenomenon occurring in a case of poliencephalitis superior, of the hemorrhagic type of Wernicke. In many of the sections, the ganglion cells included pigment bodies, apparently of hemosiderin, which were seen at the time by Dr. McCarthy and considered the same as in the case under discussion. The bodies gave the characteristic stain by the slow eosin method, and were always found in close proximity to bloodvessels or else extracellularly in the lumen of the vessel. A curious feature, however, was that the pigment-bearing cells were found chiefly in the pons, where the hemorrhages of the poliencephalitis were not found; and were not present where there were

hemorrhages, namely in the oculo-motor nuclei region or the occipital lobe. The bodies were noticed simply as a curiosity and no attempt was made to explain their origin.

Dr. Williams asked whether Dr. McCarthy came across any cases where there was no lesion in which the manifestations were epileptic.

Dr. McCarthy stated that in none of the experimental work were convulsions produced. The experiments consisted in tying off areas of a sinus, damming blood back into motor areas, also in producing experimental thrombosis. Dogs and rabbits were used. In none of them were convulsions produced. They did not give true hemosiderin reactions, simply partial reactions.

Dr. C. H. Frazier read a paper on Rhizotomy for the Relief of Gastric Crises in Tabes Dorsalis.

Dr. Charles K. Mills said he wished to endorse the operation in cases of the kind to which Dr. Frazier referred and in some other forms of visceral crises in tabes, as for example the vesical crises and rectal crises. Pain and distress are torturing sometimes in such crises. He remembered very well the case which mainly served as the subject of Dr. Frazier's paper, because he (Dr. Mills) had made some interesting observations on the different forms of lost or impaired sensibility in the distribution of the nerve roots which had been cut. In selecting the posterior roots for section attention must be paid to the peculiarities of sensory distribution, as it is well known that a cutaneous or other area may be innervated from more than one root. In deciding on the level of a destructive or compressing lesion of the cord with the aid furnished by levels of anesthesia it is found sometimes that a level in the cord higher than that apparently indicated by the distribution of the impaired sensation must be considered.

Dr. Spiller said that in some of these cases of gastric crises he thought it might be wise to try the effect of alcohol injection of the roots. It could be done instead of cutting roots. The alcohol might possibly be injected outside the dura. If the results were not satisfactory it would be possible to resort to the newer operation on the pneumogastric nerve or even to cut the antero-lateral columns of the spinal cord in the upper thoracic region. Dr. Spiller said he did not know whether anyone had proposed the injection of posterior roots with alcohol for relief of gastric crises.

He reminded Dr. Frazier that he had cut the posterior roots for gastric crises in a case under Dr. Riesman's care which had been seen in consultation by Dr. Spiller.

Dr. T. H. Weisenburg said he had had two cases in which the posterior roots were cut for the relief of pain in tabes dorsalis. His results have not been so satisfactory as Dr. Frazier's. In the first case the patient became paralyzed afterward because of a traumatic myelitis produced at the time of the operation. The second case was extraordinary in many ways. He was a man about 45 years of age who had Charcot joints in both elbows and shoulders, most of the metacarpal and finger joints, one knee and in the dorsal vertebræ. While it is not at all unusual to have multiple Charcot joints in tabes, yet, so far as Dr. Weisenburg knew, no patient had ever been reported with so many Charcot joints as this. Besides that there have been only a few cases of trophic involvement of the vertebræ on record. This patient had almost a complete transverse myelitis. Besides he had incessant pains in the legs and

abdomen which were of such severity that the patient asked for an operation, preferring the risk of the wound not healing to continuing with the pains that he had. The operation was performed by Dr. Stewart Rodman and to the amazement of all, pus was found in the joint. The roots were cut and the patient had some relief.

Dr. Weisenburg stated that while he believed cutting of the posterior roots for definite pains such as gastric crises, is more or less accepted, cutting of roots for pain in different parts of the lower limbs has not altogether met with a great deal of success, and he was inclined somewhat to doubt the success of such procedure, and asked for Dr. Frazier's opinion.

Dr. Tom A. Williams said that in spite of the reported success in the one case in which the solar plexus was stretched, he thought it was very doubtful whether the nervous system had anything to do with it. The case seemed quite analogous to crises of lightning pains, for although these are peripheral in origin, *i. e.*, radicular, they are not relieved by cutting the peripheral nerve, and the case Dr. Frazier showed demonstrated that operative measures are successful when directed to the roots. It would seem very unlikely, too, that the pneumogastric had anything to do with the lightning pains and that is borne out by the failure of the two operations cited by Dr. Frazier to relieve lightning pains by cutting it. We know that the sensations from the viscera are not of a nature to be bettered by that operation. It seems irrational too to section the roots post-ganglionically, and it would seem the proper operation would be to cut the roots within the dura, to prevent conduction of irritation which starts in the root itself (Nageotte) and not in any fibers of distribution, either in the intercostal nerves or the autonomic nerves of the viscera. When the root through which some fibers referred to are cut, functional disability is produced which may be perhaps almost as intolerable to the patient as the crises themselves. He thought these were the pathological considerations which should be borne in mind in operations of choice in tabes.

Dr. Alfred Gordon said he had an experience of three cases of operation for tabetic crises: one patient died, the other improved. It is now the ninth month and there is no recurrence of pain. The third case is very curious. There was a recurrence of pain at the end of three weeks, although the roots were cut on both sides (8th, 9th and 10th). Dr. Gordon could not understand why the operation in the second case was very satisfactory, and not in the third case, in which an identical operation was performed. Dr. Gordon asked Dr. Frazier whether he has had any experience with the new procedure, consisting of extraction or avulsion of peripheral nerves for pain in the thoracic region. The same satisfactory results have been obtained by some men. The operation is of course not so serious, not so bloody and not so difficult.

Dr. Frazier stated in reference to Dr. Gordon's inquiry in regard to operations peripheral to the dural sac that he had had no experience. He called attention to the extraordinary variation in the effect of root resection upon cutaneous sensation, while pain has been relieved in almost all cases, if not for all time, at least for a while, there has been an extraordinary difference in the sensory disturbance. In some there is apparently no sensory disturbance whatsoever, in some partially disturbed, and in some absolute anesthesia.

In answer to Dr. Weisenburg's inquiry regarding the propriety of

sectioning roots in crises of the intestine, he thought the underlying principle is sound no matter to what organ the pain may be referred. In the particular case which Dr. Frazier reported the pain was referred to the stomach, and he therefore confined his remarks to gastric crises. He recommended the operation for the relief of intractable pain, for inoperable carcinoma of the breast as much as for crises, and he saw no reason why it should not be applied to the relief of pain in the bladder.

He presented this subject to the Philadelphia Neurological Society with a good deal of apprehension, and was agreeably surprised to hear that it met with almost universal approbation, especially as in looking over the literature, one is struck with the dearth of American contributions. Most of the operations have been performed abroad, chiefly in Germany.

It so happened that the case Dr. Frazier operated on for gastric crises was supposed to have an affection of the biliary tract, and only by calling Dr. Mills to his assistance did he discover the patient had tabes. Dr. Frazier thought the operation thoroughly rational and sound and should be strongly endorsed. He thought we had gotten to a point in the surgery of the central nervous system where we need not look with the same apprehension as we did in the past upon opening the dural sac. For the same reason, the profession to-day is much more timid about operations on the spinal canal than the cranial cavity. There was a time when lesions of the brain were approached with a good deal of anxiety, but now he thought the majority of the profession recognized the advantages of early exploratory operations for suspected lesions of the brain. The profession, he thought, should take the same attitude with regard to exploratory operation in lesions of the spinal cord. The risk in the latter operation is not as great and the operation much easier of execution. In the cases he has had in his clinic, there has not been a death from any cause peculiar to the operation itself.

TWO CASES OF HEREDITARY SPASTIC PARALYSIS OCCURRING IN THE SAME FAMILY

By Williams B. Cadwalader, M.D.

Case I. C. W. 11 years. Patient developed normally and seemed healthy until five years of age, when his mother first noticed nystagmus developing. Two years later he began to have difficulty in walking, and ever since that time the lower extremities have very gradually become more and more spastic. In all other respects the patient has been entirely healthy.

Physical examination reveals spastic paresis of both lower extremities with increased tendon reflexes, bilateral ankle clonus and Babinski sign, well-marked horizontal nystagmus. Sensation normal. Nothing else abnormal was found.

Case II. H. W. 7 years. Brother to case I. A similar difficulty in walking began when he was five years old and has gradually increased up to the present time.

The physical examination revealed a similar condition with spasticity of both lower extremities, increased tendon reflexes, slight ankle clonus, but Babinski sign was present on the left side only. Nystagmus was absent. Sensation normal.

In all other respects both patients were entirely normal and much above the average mentality. The blood examination of the mother, both patients and four brothers gave negative reactions for the Wassermann and Noguchi tests. The patients were the second and fourth in a family of eight children. The others were entirely normal. One first cousin, one uncle, one grandmother and grandfather on the paternal side were all similarly affected. There was no definite history of syphilis nor of alcohol.

Dr. Milton K. Myers reported a case in which epilepsy developed after the overuse of thyroid gland extract.

Translations

DREAMS AND MYTHS. A STUDY IN RACE PSYCHOLOGY

By Dr. Karl Abraham

of Berlin

Translated by Dr. William A. White

superintendent of the government hospital for the insane, washington, d. c.

(*Continued from p. 634.*)

Now the period of time in which a myth develops is naturally infinitely greater than for a dream. Further we can obtain, from a person whose dream we are interpreting, information about doubtful points. To analyze a myth, on the contrary, is extraordinarily difficult, because we are required to penetrate a psychological structure by comparison and combination, that originated thousands of years before. After so long a period of time it is only in a few especially favorable cases that it is possible to ascertain, what share in the displacement work was due to the time in which the myth was fixed, and what to later times, in which it was passed by word of mouth from generation to generation. New generations had new views. So where a transmittal did not correspond to its views, that generation undertook a "secondary elaboration" of the myth. We should also not forget what a wide reaching influence the myths of neighboring people have on the transmittal of racial myths. For all these reasons it would call for doing violence to the facts if we undertook, in myths, an artificial separation of diplacement and secondary elaboration. I leave it at times uncertain, when I speak hereafter of the work of displacement in myths, whether I am dealing with a primary or a secondary displacement.

VIII

The Effect of Displacement in the Sagas of Prometheus, Moses, and Samson

We have already repeatedly met with the effects of displacement in myths without having especially devoted our attention to it. The Greek Prometheus saga bears clear traces of the work of displacement. As we have learned from Kuhn's researches, this myth reaches back to a time in which the natural forces were not yet worshiped in the form of man-like gods. Agni and Matharichvan came into existence with the gradual personification of the gods. The former was the fire god; the latter the fire-boring-out god, who brought Agni back when he had hidden himself. The two figures are not separated originally; Matharichvan appears rather as another name for Agni and separates itself later from him as an independent being.

Matharichvan, to whom the Greek Prometheus corresponds, was then properly the fire-bringer. In the Greek myth he became the fire-robber. He took the fire from heaven to man against the will of the gods and suffered punishment for doing it. Prometheus must thus be subordinated to the will of Zeus; therein lies the most important displacement of the saga. The original myth, according to which Matharichvan—Prometheus—brought Agni back, lacks the affect tone in the way of censure for this undertaking. The Greek version of the myth employs here an affect displacement. Prometheus, who sinned against the gods, becomes thus the representation of man who often enough has rebelled against the council of the gods. Through this transformation of the saga the original sense of the name Prometheus —Pramantha—was lost. The ancient, naïve times had called him the generator, the borer. This view disappeared by repression until the people had fully forgotten the meaning of the names. The meaning was still further modified and now he is interpreted as "forethought." Had he not brought his creatures fire and so honestly won such a name! The transformation of the name Pramantha into Prometheus and the associated change of meaning offers us a very instructive example of displacement.

The process of displacement in the Promentheus saga gains considerable in interest if we turn our attention to that portion of Kuhn's works not hitherto considered. Kuhn treats along-

side of the myth of the origin of fire the one closely related to it of the origin of the nectar. I cannot go into the common origin of these myths here without departing too much from the theme. I will be satisfied therefore with one reference, that among other things has given occasion for the common origin of lightning and rain from the storm clouds, and reduced fire and nectar in the myth to a common origin. Our interest here is mostly a result of comparative mythology: That the Greek (and Indo-germanic) saga of Prometheus corresponds to the Moses of the Bible. If we compare the law-bringer Moses with the fire-bringer Prometheus on the basis of the Old Testament accounts and the presentation of Æschylus the two figures certainly appear to have very little in common. The story of Moses carries, however, as well as that of Prometheus, the traces of a considerable displacement. We must probably differentiate the old mythical Moses from the biblical. The biblical Moses ascends, like Prometheus, to heaven and brings the laws down— as he did the fire. Amidst thunder and lightning he ascends; here the storm returns. It is probably also not an accident that the law was called "fiery." In general we see Moses as the true servant of this one God; while Prometheus comes in conflict with the gods through the robbery of the fire, Moses receives the law from the hand of God so that here a conflict is excluded. The rebellion of Moses against God is found in another place. The figure in the heathen myths corresponding to Moses brings forth water from the clouds by means of lightning. Moses is identified with the analogue of the lightning or the borer of the heathen myth: with the rod, this always recurring symbol in numerous sagas. With this rod he struck water from the rock in the wilderness— against the command of the Lord (IV Mos., Kap. 20). Moses was punished for disobedience: He was not allowed to enter the promised land. Moses, therefore, did not steal the water, but he struck on the rock and called it forth. According to the command of God he should have spoken to the rock; impatience rent him to strike the rock. The displacement is here extremely far reaching: It is not enough that Moses was a simple man, a servant of God—he did not even once commit a robbery, like Prometheus, but called forth the promised water in an over-hasty manner. And so Moses's guilt is displaced to a relatively insignificant sin. At the same time God's power is

exalted in that he will not allow even a relatively insignificant sin to go unpunished.

Here then is opened to us an interesting perspective on the origin of certain pathological ideas. We find a quite similar process of displacement, called by Freud "transposition," in the genesis of compulsive ideas. According to Freud's investigations compulsive ideas have their root in self reproaches of the patient, which relate to forbidden sexual activity. The patient tries to compensate by over-correction in other territories for what he, according to his view, has done that was sexually sinful, as if he had, as a matter of fact, in this indifferent territory, permitted himself to be at fault.[31]

I must refer briefly to a nearly related process in the psychoses (dementia præcox, melancholia).[32] The delusions of sin of these patients can often be traced to self-reproaches of a sexual nature. Such patients sometimes displace the feeling of guilt from some sexual reminiscence onto any insignificant fault of another kind. They are by no means to be dissuaded from these ideas. If we turn to the Freudian view of these conditions the ground for the conduct of such patients is evident. They desire to put aside the feeling of guilt.

Displacements, as shown in the story of Moses, we meet in the Old Testament in great number. We find even there many original heathen myths, which, as the race went more and more over to monotheism, were used for the service of the new religion and for this purpose had to suffer substantial displacement. That the transition to monotheism was effected only very gradually and by great struggles is testified to by all the historical books of the Old Testament. The gods or god-like beings of the old myths must come down from their high pedestal, must be satisfied with the rôle of men, and subordinate themselves to the one god. In some cases this displacement went so far, that the one-time god became as man a specially faithful follower, the chosen of the one god. The figures of the patriarchs and of Moses are products of this displacement process. For the study of the latter the saga of Samson lends itself especially well. We possess a treatise on this subject from the master hand of H. Stein-

[31] I cannot, in this place, go into Freud's teachings on this point and refer to the "Sammlung kleiner Schriften zur Neurosenlehre."

[32] Abraham, "Das Erleiden sexueller Traumen," etc., 1907.

thal.[33] I give here only some of its principal features because it leads to similar results as the analysis of the Prometheus saga.

Samson, as can be seen from the etymology of his name, is the sun god of the old semitic heathendom and corresponds to Hercules of the Indo-germanic saga. He is also really the sun god or -heros; the Hercules saga resembles that of Samson in a number of important things. Samson is the sun god, with long hair like Apollo. He is the warming, generating god, the blessing giving sun; in the summer he reaches the height of his power. So winter and night are naturally his adversaries; they find their personification in the moon goddess. When in the evening the sun sets, then according to one of the ideas of the sun god held by many peoples, he flees before the pursuing moon goddess. Although he reaches his greatest strength in summer, he cannot enjoy it; for from the solstice he loses it again. He is subdued by the night and the winter goddess as a strong man is by a wife. Samson, the generating sun god, appears in the representation of the Book of Judges, weak as compared to his wife. It is very probable that Delilah is a transformation of the night and winter goddess. Samson loses his strength when he loses his hair; that is the sun god loses his rays. However, as the sun, after the expiration of winter gets back its strength, so the hair of Samson grows again, so that his strength again returns; only for a short time to be sure. For he sought death and found it at the feast that his enemies, the Philistines, celebrated in honor of their god, Dagon. Dagon, however, is the unfruitful god of the seas and the deserts, in the myth opposed to the sun god and therefore an unfriendly power.

Samson, the hero and the sun god, kills himself. That is a feature, which we also find again in the related myths. In the biblical story the suicide of Samson besides occurring at the feast of Dagon occurs still a second time, certainly in a hardly recognizable form. The sun god unites within himself two opposed tendencies. He is, on the one side, the warming, life promoting god, on the other side, the burning, unhappiness causing, consuming god. As the latter he is represented by the symbol of the lion; as a lion the sun reaches in summer its greatest strength. As Agni and Matarichvan originally were a single

[33] Steinthal, "Die Sage von Samson," *Zeitschr. für Völkerpsychol. und Sprachwiss.*, Bd. 2, 1862.

being, but later became forces opposed to one another, so also the consuming heat of the sun—under the symbol of the lion—comes to be split off from the blessing bringing sun god. Samson's first heroic deed, Hercules' first task, was the vanquishing of a lion. The good sun god killed the consuming god as a lion and therefore killed himself.

An exceedingly distorting displacement has produced from the sun god the hero Samson consecrated by God. Only a few, of themselves alone not understandable remains of his original being still adhere to him: the strength, which reposes in the hair, the weakness as against the woman, the end by suicide. It was because of the long hair that Samson became, in the later saga, the Nazarite, the beloved of God, who freed his people from bondage. Here is probably the identity of Samson and Hercules with the Phönecian Meleager, who was a tutelar god of his people. How the sun god of the heathen times comes to be the god-ordained hero is not cleared up in all its details; that, however, such a transformation did take place, many sources of information demonstrate. Israel had fought with the Philistines for centuries and lost her freedom through these conflicts. The old sun god, who formerly as the god of fruitfulness, and as an enemy of consuming heat, represented a wish of the race as fulfilled, must now as a national hero bring another wish to fulfillment. Like Moses he came to the service of the one God and was chosen by God to serve his people. He does not appear as a leader but always alone as the sun wanders alone in the heavens. He alone fought the Philistines with the jaw bone of an ass; even when blinded he opposes himself to thousands of Philistines and takes them with him in death.

IX

The Means of Representation of the Myth

After we have found again, in myths, the work of condensation and displacement of dreams, there remains still another aspect of the dream work in which to seek for its analogy in myths. Not all ideas are, for the dream, immediately representable; the same is true for the myth. Surely there exists a difference: the dream dramatizes, while the myth bears the form of an epic. Notwithstanding, both are obliged to have the same re-

gard for the technical representability of their material. The dream, for example, must find a figurative representation for the abstract. With this object turns of speech will, with preference, be taken literally. In one of the dreams reported by Freud, the dreamer, for example, wishes to express that a musician with whom she was in love towered (turmhoch) above all the others. In the dream she saw him in the concert hall standing on a tower (Turme) and directing from that point. The logical relations of our speech are also not representable as such, in the dream. We have already learned how the dream represents the very important relation "just as" by means of identification, and that in myths the same procedure is traceable. Another such relation: "either—or" is expressed in various ways in the dream. One method is, for example, the arranging in a row, of the different possibilities, that is, each is figuratively represented and then, according to choice, placed beside the other. One other way I will briefly call attention to. The dreamer expresses in different dreams the different possibilities characterized by either—or. The dreams of one night serve, according to experience, the same wish-fulfillment; according to my own experience it appears to me that a series of dreams in the same night not seldom oppose to one another the different possibilities of wish-fulfillment and so correspond with an either—or. In one case this explanation was especially clear. A woman, who a short time before her marriage, was in fear of opposition from different quarters, related to me five dreams which all occurred the same night. I was able, by virtue of an exact knowledge of her life, to establish, that in the five dreams all the different future possibilities were realized. The dreamer, in each dream concealed her betrothed behind another person of her acquaintance who in one of the dreams was in a corresponding position. The rich utilization of infantile material was very interesting. Quite in the same way races proceed with their myths. Races also represent the same wish in different myths. We learn here one of the causes for the relationship in the contents of many myths. If a wish is especially strong it finds expression in different myths. Each single representation takes a new position in reference to it, approaches it from a different side. One need only refer to the two accounts of creation that run side by side in the Bible.

A close relationship between two elements of the dream is

commonly expressed by both elements (or their symbols) being placed close together in the manifest content. We see the same thing in myths. In the Prometheus saga we find the borer always near by the disc or the wheel; in Genesis we find the serpent and the apple quite as near one another. The Prometheus saga shows us further, very beautifully, how one person can be concealed in several symbols: Prometheus is borer and lightning. An extremely interesting example of this kind we have met in the Samson saga. The suicide of the sun-god Samson is represented by Samson as sun-hero killing the sun-lion.

The greatest claim is made on the technic of presentation by the avoidance of the censor. We have already spoken of the symbolic clothing. In the saga of the descent of the fire we find symbolic presentations especially for the male organ of generation and for the function of generation. We are reminded by it of dream symbolism. The borer, rod, or similar instrument is a common symbol in dreams as the representative of the male sexual organs. The dreams of women, in which they are stabbed by a man, are plainly wish fulfilling. In other dreams a sword, or a tree, or other plant of appropriate form, appears as a symbol of the male.

The feminine correlate is also formed in the saga. It is the sun's disc or its rim, or the cloud in the hollow of which moves Pramantha, or the thunder-bolt stirred up by the lightning; it is also obviously the cave in which Agni has hidden.

Fire appears in three forms in the Prometheus saga: as heavenly fire, as earthly fire, and as the fire of life. In the dream fire very often signifies the sexual fire, love. As Prometheus is the generating god so probably the love fire may come to be considered as a fourth component.

(To be continued.)

Periscope

Zeitschrift für die gesammte Neurologie und Psychiatrie

(Volume IV)

1. The Occurrence of Paranoid Symptom Complex in Progressive Paralysis. O. Kern.
2. The Significance of Wassermann Reaction for Psychiatry. F. Plaut.
3. General Paralysis in the Female in Greece. M. Oeconomakis.
4. Acute Poliomyelitis and Polyneuritis. I. Wickman.
5. The Significance of the Thyroid Gland for the Nervous System. F. K. Walter.
6. The Bacteriology of Sydenham Chorea. J. Donath.
7. The Degenerated Women of the Higher Social Status. F. Mörchen.
8. Contribution to the Pathology of Cerebrospinal Fluid. V. Kafka.
9. Contribution to the Study of the Plethysmography of the Human Brain. M. Resnikow and S. Dawidenkow.
10. The Etiology of Dementia Præcox. E. Schroeder.
11. Reversed Function of the Brain in a Right-Hander. M. Lewandowsky.
12. Delirium Tremens Following Trauma. M. Rosenberg.
13. Motor Sleep Disturbance. E. Trömner.
14. Phosphorus Metabolism in Neuroses and Psychoses. S. Loewe.
15. Contribution to the Theory of Caloric Nystagmus. M. Rosenfeld.
16. Polynucleosis in Cerebrospinal Fluid, Especially in General Paralysis. M. Pappenheim.

1. *The Occurrence of Paranoid Symptom Complex in Progressive Paralysis.*—Kern reports four cases of general paralysis in which the paranoid symptom complex was in the foreground. Although conclusions from such a small number cannot be drawn, nevertheless he considers his studies stimulating for further investigations. It is particularly important to note that a paranoid symptom complex usually occurs in atypical cases. They are stationary, or present focal symptoms (Lissauer), or the posterior columns are involved. The paranoid ideas do not become fixed or systematized because of disintegration of personality. The question of endogenous and exogenous origin of the paranoid symptom complex is interesting, and if anatomical bases for this symptom complex could be determined, then an actual progress towards the recognition of psychotic disease-picture would be made.

2. *The Significance of Wassermann Reaction for Psychiatry.*—In this article Plaut gives his and other investigators' results. In most cases of paresis the Wassermann is positive in the blood and fluid. Of his own 276 cases, in 9 only the cerebrospinal fluid was negative, and one serum showed no complement deviation. He does not agree with the French observers that in the early stages of general paralysis Wassermann reaction is of no assistance for diagnostic purposes, and that in the beginning of this disease the blood is usually positive and the fluid negative; later both the serum and blood become positive; and in the last stages the serum only is negative. Many observations tend to show that a weak complement deviation suggests remission or a stationary course of the disease.

The parallelism between the Wassermann reaction and lymphocytosis, and globulin content, does not exist according to many investigators. Mercury and potassium iodide exert no influence on the Wassermann reaction in general paralysis. Ehrlich's preparation "606," as Alt demonstrated, can make the reaction disappear from the blood, and Plaut observed that the cerebrospinal fluid gave a weaker reaction. In cerebral syphilis the serum is usually positive and the cerebrospinal fluid negative. Of 37 cases in 4 the fluid was only slightly positive. In borderline cases where the diagnosis lies between general paralysis and cerebral syphilis, the Wassermann test is of relative value, but great caution should be exercised in interpreting results. A marked positive reaction of the fluid argues in behalf of general paralysis; a negative fluid reaction does not necessarily rule out general paralysis, for there are cases on record in which the fluid is negative. If both the fluid and serum are negative, cerebrospinal syphilis may be thought of. However, in such a case, the syphilitic nature of the disease may be questioned. In the literature, the 400 recorded sera and 127 cerebrospinal fluids showed 71 per cent. and 59 per cent. respectively, a positive reaction. Nonne and Holzmann's 93 cases of tabes gave a positive reaction in 9 per cent. of the cerebrospinal fluid and 67 per cent. of the blood tests. Studies of the Wassermann test in the feeble-minded were made, and Raviart, Breton and Petit found a positive Wassermann reaction in 48 out of 158 idiotic children; Kellner, Clemenz, Bruckner and Rautenberg's 216 cases showed only in 13 a positive serum reaction; and Lippman in Daldorf and Uchtspringe demonstrated 13.2 per cent. and 9 per cent. respectively complement deviation in his cases of the feeble-minded. The author examined 54 paretic families with 100 children; only 39 per cent. were free from syphilis. Possibly this is due to the fact that at the time of the examination lues was in its latent form.

3. *General Paralysis in the Female in Greece.*—General paralysis in women in Greece is exceptionally rare. It is estimated by various authors from 1 to 19; 1 to 17.27; 1 to 24; 1 to 20; and 1 to 17. These low figures are rather striking; in Europe and in this country the usual ratio is between 1 to 3 or 1 to 5. The author reports a case of paresis in a woman in which in addition to syphilis there were other factors determinating the disease. He maintains that the women in Greece lead a quiet life, less predisposed to luetic infection, and are free from injurious influences which are usually the exciting factors in a psychosis.

4. *Acute Poliomyelitis and Polyneuritis.*—The investigations in recent years of the prevailing epidemics of acute poliomyelitis suggest the inquiry of the relationship between acute poliomyelitis and acute polyneuritis. The author briefly reviews the literature on the subject and discusses in great detail a case of a young boy three and one half years old who had been bitten by a snake on August 13, 1908. This was rapidly followed by edema of both legs, which disappeared in a few days; but a week later the patient suffered from pharyngitis attended by fever, which disappeared and left the patient with a spreading, flaccid paralysis of the legs, trunk muscles and muscles of both arms, with a temporary incontinence of urine and constipation. The paralysis remained in the legs and certain muscles of the arms. The especially interesting features in the case were the sensory irritation pain and susceptibility to pressure of the nerve trunks. Later a very marked sensibility of the body occurred, which needed frequent change of position. The history of the case and its symptoms lead the physician to the diagnosis of toxic polyneuritis fol-

lowing snake bite. The course of the disease shows, however, that it was not a case of polyneuritis, but of acute poliomyelitis. A year after the onset of the sickness the paralysis still remained in several groups of muscles and showed the characteristic symptoms of poliomyelitis, inasmuch as atrophy and paralysis occurred irregularly in certain groups of muscles affecting the left arm, including the deltoid muscle, and the right arm, including the triceps, and the muscles of the thumb. Distribution of this kind is very frequent in poliomyelitis and exceedingly rare in polyneuritis. The author comes to the following conclusions:

1. Clinically a neuritic or better, a neuritic-like, disease should be differentiated from the Heine-Medin disease.

2. This form corresponds precisely with the disease-picture of an acute idiopathic infectious neuritis.

3. Hitherto the reported cases belong, especially in their etiological relations, to the Heine-Medin disease.

4. The question remains open whether the neuritic form is caused only by poliomyelitis processes or only by neuritic processes, or produced by a combination of both these processes.

If we keep these facts before us, the studies of the epidemics of poliomyelitis have in no way confused us, as has been asserted by some authors, but, on the contrary, have thrown new light on the etiology of the idiopathic infectious neuritis.

5. *The Significance of the Thyroid Gland for the Nervous System.*—The author gives a detailed account of his experiments on rabbits. It has been proved on rabbits that the loss of the thyroid gland caused a slow degeneration of the nerves and produced almost a complete cessation of regeneration. This symptom occurs immediately after thyroidectomy. This proves conclusively that the absence of the thyroid gland produces immediate effects on the nervous system. The accumulation of the secretion of the thyroid gland in any part of the body is very slight, otherwise the first stages of regeneration would go on. The activity of the degeneration is not influenced by the cachexia. The entire nervous system appears to be affected in the same way after thyroidectomy. The question arises whether the pathological process takes place in the nerve fibers or in the cells. v. Cyon is of the opinion that the nervous system is affected in all its parts—cells, fibers and end-organs. The author's experiments lead him to believe that the central cells are very little injured, as the regeneration of the axis cylinder is mainly dependent on them. It is noteworthy that the retardation of the regeneration is purely functional for a long time, as the author found that after 110 days after thyroidectomy, during which time the rabbits had been fed with thyroid gland preparations, the nerve cells regained at once their normal capacity for regeneration.

Now the question arises in what way the thyroid secretion exerts its influence on the nervous system. Ewald and others hold to the autointoxication theory; the author is in favor of the nutrition theory, in support of which he cites the following facts: (1) The acute and marked action of thyroidectomy on the process of regeneration. (2) The slight accumulation of thyroid secretion in the body. (3) The immediate appearance of the normal regeneration process, even in cases with cachexia, on the administration of thyroid gland preparations.

6. *The Bacteriology of Sydenham Chorea.*—The author made bacteriological examinations of the blood, cerebrospinal fluid and brain tissue in seven severe cases of chorea. Two of these patients had amentia

as a complication. Two suffered from chorea gravis, which proved fatal. Two of the uncomplicated cases had such marked jactitation that the blood had to be withdrawn from the vein under narcosis. In five cases staphylococcus pyogenes albus was found; in four the germ was isolated by inoculation of the blood, and in the other instances was isolated in the brain tissue. In the other two cases staphylococcus pyogenes aureus was isolated in the blood and cerebrospinal fluid respectively. In one case sarcina lutea was found in the brain tissue, and in the other in the blood; and in the latter sarcina alba was demonstrated in the cerebrospinal fluid and brain tissue. In other cases undifferentiated diplococci were isolated from the blood.

The author attaches a pathological importance to staphylococcus pyogenes albus and aureus, without attributing them as the specific cause of chorea minor. In his opinion streptococci as well as staphylococci may be the cause of chorea in an individual who at the time of puberty is weak, anemic and of a nervous constitution, and hence unable to resist the bacterial invasion. There is no doubt of the infectious nature of chorea when fever and delirium are accompaniments. In an individual constitutionally weak any infectious disease may produce chorea.

7. The Degenerated Women of the Higher Social Status.—The names of Steinbeil, Tarnowska and von Schoenbeck are still fresh in our memories. The legal proceedings have been named after them; the peculiarities and personal characteristics of these women have brought their cases prominently before the public: and they deserve a thorough investigation from psychological and psychiatrical standpoint. The clinical symptoms must be investigated carefully in order to show their importance in psychiatrical proceedings and enable one to decide what means should be taken by the state for the care of such individuals. These individuals commonly show an abnormal suggestibility, lack of judgment, inconsistency in thought and action, marked emotional variability and excitability, inability to distinguish the essential from the non-essential, lack of insight in their ethical relations and responsibilities, absence of moral impulses, and marked inclination to lying, posing, intriguing, and to pseudologia phantastica. This picture may be termed moral insanity.

The author considers these symptoms to indicate positively a degenerate dementia, with a tendency to episodes of excitement. He does not consider the disease-picture as hysteria, although there are hysterogenic symptoms.

This type of degenerated women is especially important from the forensic and psychiatric standpoint because of the perverse sexual relations which frequently bring them into criminal complications. Lombroso named them "prostitutes of the higher classes." This is indeed a proper designation. One who is not acquainted with this class of women might, for obvious reasons, believe that these "virtuoso of vice" are simply incapable of sexual gratification. If their increased sexuality would seek satisfaction in a normal manner, they would in no way be so dangerous. As a matter of fact they easily avoid the normal sexual relations, and commonly bear a marked aversion for them, because they are fond of perversions. The innocent, child-like playfulness, the attractiveness in dress, manners and general behavior, exert a fascinating influence on most men, to whom they are willing to concede everything except sexual relations. However, they succeed in entangling men and in making them fall prey to their perverse sexuality. Women of this character are always likely to bring disgrace to their family and children. The

unsocial, abnormal woman is frequently responsible for the downfall of many professional and business men and for their marital infelicity, which usually terminates in divorce.

The author's investigations and study of these degenerate individuals lead him to believe that they are fundamentally good at heart, attractive, sweet-tempered and easily manageable, and that their diabolical, criminal and obscene proclivities are not the result of the essential character of their peculiar make-up, but rather the result of their inability to comply with the requirements and meet the expectations of the social and economic relations in which they are placed. They are stepchildren of nature, though for a time apparently envious individuals. In life they go to ruin, and nearly all who become implicated with them meet the same fate.

The author's analysis is crude; had he been acquainted with Freud's psychology he would have given us a more plausible interpretation of this morbid mental phenomenon.

8. *A Contribution to the Pathology of Cerebrospinal Fluid.*—The author discusses in general the diagnostic value of lumbar puncture in general paralysis, tabes dorsalis, tumors and cerebral hemorrhages. He cites five cases. Two were clearly defined clinically as paralysis, one as cerebral hemorrhage, one as melanosarcoma of the brain and meninges, and another as glioma of the right temporal lobe. In cases of suspected brain tumor one is always reluctant in making a lumbar puncture for reasons well known, and tumor cells are exceedingly rare to find. The tumor cells occur most frequently in cerebrospinal fluid in sarcoma of the meninges, and then they are not commonly recognized, especially if one uses the method of the French investigators. Many of the degenerated cells may resemble tumor cells.

The author's case was a melanosarcoma and the pigment of the cells assisted materially in the diagnosis. The case of glioma had been diagnosed as abscess of the right temporal lobe. The diagnosis was established at autopsy.

The examination of the cerebrospinal fluid may give valuable information in cases of tumor if we find the cells and have recognized them as such, but for obvious reasons lumbar puncture is often a too serious procedure to carry out in the interest of the patient.

9. *A Contribution to the Study of the Plethysmography of the Human Brain.*—This article does not lend itself to review.

10. *The Etiology of Dementia Præcox.*—This psychosis confirms the saying of Savage that "only individuals with a predisposition become mentally deranged." There is no psychosis without predisposition. Direct causes, no matter how far reaching they may be, are not able to call forth a mental disorder without a predisposition. Both factors are absolutely essential to cause a psychosis. Pfister emphasizes that the toxic substances alone are not sufficient to cause and maintain the disturbing process of the brain. Predisposition is a congenital weakness, the brain being more susceptible to the toxic actions of toxins. This also gives an anatomical support to the theory of Meyer, Hirsch, Serbsky and Roric, who have frequently expressed the opinion that dementia præcox is a degenerative psychosis which depends on a congenital anomaly or an hereditary developmental disturbance of the brain. Weygandt pointed out that cases of dementia præcox frequently remind one of idiocy. Lomer confirms Gaupp's supposition that the greater percentage of these patients show signs of physical anomalies before the real occurrence of the psychosis. It appears to be a reëxcitation of a fetal disease process.

11. *Reversed Function of the Brain in a Right-Hander.*—The patient was fifty-five years of age, and his history was unimportant except for the fact that he was markedly right-handed and that for many years he had tremor of his hands. The neurological disorder was rather gradual and progressive. At first this condition was characterized by paralysis of the left upper and lower extremities, and later by inability to find proper words to express his thoughts. Shortly before his admission to the hospital it was noticed that he could not sign his name. There was a history of vomiting and headache. Examination in the hospital revealed flaccid paralysis of the left arm and leg with Babinski phenomenon on the same side; sensibility reduced, left; hemianopsia, left. Right side was free from pyramidal irritation. Spontaneous speech reduced; named only few objects which were shown to him. When an object was wrongly named he recognized it as such; complied with simple requests; comprehension was dull. He was unable to read aloud or carry out written requests. There was some evidence of apraxia, which, however, was difficult to distinguish from sluggish comprehension. Bilateral choked discs. He was delirious at times, otherwise apathetic. He presented other symptoms of increased intracranial pressure. Autopsy showed glioma of the right temporal lobe, which extended into the occipital lobe where degenerative changes were in evidence. Optic tracts were obstructed by the tumor growth. There are other anatomical details of interest, and it would be well to consult the original document. The case was considered as one of crossed aphasia and apraxia with reversed functions of both hemispheres in a right-hander. Bromwell and Le Fort have reported similar cases.

12. *Delirium Tremens Following Trauma.*—The author reports a case of delirium tremens which developed after a trauma. He offers the following conclusions: In cases where there is a history of trauma it is necessary to ascertain the time relation of the injury—whether in the prodromal stage of the delirium or so remote as to exclude any causal relation to the delirium. The nature of the trauma is very essential to determine; chest and skull injuries are more important than others. On the other hand, if the trauma is purely mechanical and produces no particular influence on the metabolic changes of the body or chemical processes of the brain, the indirect results of the trauma are of utmost importance. Through careful analysis of the effects of the trauma and by excluding other complications, we are able to determine the relation between the trauma and delirium tremens.

13. *Motor Sleep Disturbance.*—The author discusses briefly the physiology of sleep and seems to adhere to Claparéde's views that sleep is a reaction of the organism towards fatigue. Speaking in sleep he regards as motor sleep disturbance, which often occurs in children and rather rare in adult life. Somnambulism is divided into three parts: purposeless, purposeful, and anxiety reactions. He devotes a very interesting chapter to enuresis in children. He discusses therapy and etiology. It would repay to read the paper in the original.

14. *Phosphorus Metabolism in Neuroses and Psychoses.*—The author offers the following conclusions: (1) That the secretion of organic phosphoric acid in daily urine, following an epileptic attack, is greatly increased; and (2) that the per centum ratio between the sum total of the phosphoric acid and organic phosphoric acid in such periods in epileptics is especially increased.

15. *Contribution to the Theory of Caloric Nystagmus.*—The author

maintains that the position of the head exerts a marked influence on the direction of the nystagmus. Through calorization some changes in the vestibular apparatus takes place which bring about change of position in the body; the latter alone in the same subject produce no, or at least very slight, influence on the direction of the already existing nystagmus. The fact that the direction of fixed deviation returns after the ear is syringed with cold water, is not at all striking, but, on the contrary, to be expected. The question of latent time in narcosis and calorization is discussed.

16. *Polynucleosis in Cerebrospinal Fluid, Especially in General Paralysis.*—The author offers the following conclusions: (1) In the cerebrospinal fluid of paresis increase of the leucocyte content rarely exceeds 10 to 15 per cent. (polynucleosis); (2) polynucleosis is found more often during convulsive seizures or acute exacerbation than in the interim without acute symptoms; (3) the fact that frequent synchronous occurrence of these manifestations with rise of temperature and increase of polynuclear leucocytes in the blood speaks in favor of sudden generation of large quantities of paretic toxins which are responsible for the phenomena; and (4) cases of paresis in which polynuclear leucocytes exist relatively long are indeed very rare.

KARPAS AND CONZELMANN.

Review of Neurology and Psychiatry

(Vol. IX, No. 10. 1911)

1. Tabes Dorsalis and Mental Disease. (With Plate.) D. K. HENDERSON.
2. Hereditary Factors in Epileptics. A. HUME GRIFFITH.

1. *Tabes Dorsalis and Mental Disease.*—The writer has the following summary to his paper: This communication contains the report of five cases of tabes with mental disorder in which there was no evidence of the presence of general paralysis; in two cases the diagnosis was confirmed post mortem. Two of the cases presented an hallucinatory condition corresponding with that clinical picture described by other authors as characteristic of the tabetic psychosis; in these two cases there was no autopsy. Two of the cases presented a well-marked depression; one with autopsy. This type of disorder has also been described as frequently occurring in tabes. One case presented a pronounced hypochondriacal depression; the autopsy confirmed the diagnosis of tabes unaccompanied by general paralysis. The features which specially distinguish these cases from cases of general paralysis are the absence of any memory defect, and on the physical side, the absence of any speech or writing defect or facial tremor.

2. *Hereditary Factors in Epileptics.*—This report, largely statistical, consists chiefly of a series of tables. The writer examined into the family history of 154 epileptic children. The family history of 20 patients (12.98 per cent.) was healthy. In 27 cases (17.52 per cent.) it was unknown. In the 107 cases remaining, or 69.48 per cent., one or more morbid taints or neuropathic tendencies was found, grouped either under epilepsy, alcohol, insanity, phthisis, or nervous diseases of the nature of hysteria, paralysis, meningitis, etc. There were so few cases of syphilis and cancer that these factors were not included. Phthisis, alone or in conjunction with other "morbid tendencies," as an hereditary factor, was found in 43 out of 107 cases (40.18 per cent.). Alcohol history could only be traced in 8 cases, insanity in 10, and other nervous diseases in 20 cases. The writer

looks upon tuberculosis as a predisposing cause of idiopathic epilepsy. Epilepsy itself was found in the ancestry in 40 of the 107 cases or 37.38 per cent. Ten of these 40 cases also included the factor of tuberculosis.

C. E. ATWOOD (New York).

Monatsschrift für Psychiatrie und Neurologie

(Vol. 30, No. 1. July, 1911)

1. Wernicke's Influence upon Clinical Psychiatry. H. LIEPMANN.
2. Contribution to the Study of Hereditary Lues (Friedreich's Symptom). A. GIANELLI.
3. The Treatment of Sciatica by Injections of Cold Salt Solutions. V. P. OSSIPOW.

1. *Wernicke's Influence.*—Wernicke's theories and formulæ have aided little in the advance of psychiatry. Kraepelin's following has increased while Wernicke's has diminished. Freud's school is entirely at variance with Wernicke's. The great studies that have been made in pathological histology and in the finer diagnostic methods have not come from Wernicke's adherers. Nevertheless he has had a certain influence which must be reckoned with. Two questions may be asked: (1) How far have Wernicke's doctrines become of general use? (2) How far is he the originator of a thought movement, which, whether grasped by many or few, is of undoubted greatness and value? Wernicke as the discoverer of the localization of sensory aphasia ranks with the greatest of the brain anatomists and as such his mind had devoted itself to the great endeavor of reducing the whole psychic life and all its disorders to terms of physiology and physio-pathology of the nervous system. To this end he made use of all the enormous amount of organic material at his disposal. To regard mental disorders as, in the narrowest sense, neurological symptoms is the keynote of his psychiatry. He has evolved a new and elaborate classification with a wealth of new terms which are scarcely welcome in the already crowded nomenclature of psychiatry. Every case must be fitted into a certain group—a veritable "furor classificatorius." Nevertheless, although he has not succeeded in persuading the majority of psychiatrists to his way of thinking, it is undeniable that he has furnished a foundation for better methods of thought, observation and presentation, which is bound to improve the work in this direction.

2. *Hereditary Lues.*—A young girl, daughter of a syphilitic mother and herself bearing stigmata of hereditary lues, showed the complete picture of Friedreich's disease whose first symptoms dated from infancy. Death occurred at 22. The pathologic-anatomical findings did not agree with those usually encountered in Friedreich's disease; they consisted rather of a meningo-encephalo-myelitis of a very chronic character and of a syphilitic nature, which had accompanied the development of the central nervous system. The posterior column degeneration which was present was partially systemic, partially of single roots and suggested somewhat incipient tabes; the occurrence of "whorls" in the new-formed neuroglia was not characteristic of Friedreich's disease. This case shows that Friedreich's disease is sometimes to be regarded rather as a syndrome than as a nosological entity and that this syndrome may be produced by hereditary syphilis.

3. *Sciatica.*—The treatment of sciatica by injection of cold salt solution gives good results even in cases of long standing and of whatever

etiology. The method is cheap, simple and without contraindications. The quantity injected is preferably 50–60 c.c. and is given along the sciatic, gluteal or wherever pain is greatest. Repetition is necessary in many chronic cases. Severe pain usually follows for a few hours after the treatment and there may be chills and elevation of temperature. The beneficial results are usually permanent but relapses occasionally occur. The explanations given by the author for the good effect of this treatment are rather vague and unconvincing.

(Vol. 30, No. 2. August, 1911)

1. A Case of Total Aphasia. H. Berger.
2. Diffuse Endothelioma of the Internal Meninges of the Brain. E. Haeger.
3. Globulin-reaction, Albumin Reaction and Lymphocytosis in the Organic Diseases of the Nervous System. G. Fumarola and E. Tramonti.
4. The Relation of Epilepsy to Left-handedness. G. Steiner.
5. Recoveries in Neurasthenia. E. Roper.

1. *Aphasia.*—A woman at the age of 68 had an attack of right hemiplegia which cleared up almost completely. A second attack was followed by severe sensory aphasia and two months later a third resulted in complete motor aphasia. Death occurred two months after the last seizure. Besides three smaller lesions there was a large softening below the Sylvian fissure and occupying the Wernicke area, which, by its characteristics, was undoubtedly the cause of the attacks seven months before death which resulted in sensory aphasia. There was no gross visible evidence of lesion in the Broca area but a Weigert preparation showed almost complete destruction of the marrow of this region. This lesion was fresh and was responsible for the motor aphasia occurring just before death.

2. *Tumor.*—A man of 48 showed disturbances of hearing and facial paralysis; later disorder of speech and swallowing. Death occurred after about five months. A diffuse endothelioma was found involving the pia of the base of the brain. It was most developed on the under surface of the right cerebellar hemisphere and followed the cranial nerves.

3. *Globulin-reaction, etc.*—In organic diseases of the nervous system on a syphilitic basis, the globulin-reaction is present most frequently. Then in order of frequence are lymphocytosis and albumen increase. The globulin-reaction does not always mean that the nervous disease is due to the syphilis. If the reaction disappears after mercurial treatment the symptoms are certainly due to lues. If the reaction is unaffected by treatment the nervous disease probably has nothing to do with syphilis, although the latter may be in the anamnesis.

4. *Epilepsy.*—Among fifty-seven cases of genuine epilepsy left-handedness was present either in the patient or the patient's family in 89.5 per cent. The author thinks we are justified in excluding epilepsy if left-handedness cannot be found in patient or family.

5. *Neurasthenia.*—The article is based on the statistics of Binswanger's clinic in Jena during a space of ten years. Results have been surprisingly good and over 85 per cent. of the patients have been able to return to their employment. The author does not agree with the gloomy view that functional nervous diseases are increasing at an alarming rate, but thinks that neurasthenia should be as carefully and consistently treated as tuberculosis and that the results will be as good.

J. W. Moore (Central Islip).

Jahrbücher für Psychiatrie und Neurologie

(Vol. 33, No. 1)

1. A Symptom of Restlessness; The Hallucination of Hearing One's Name Called (Without and With Delusions of Observation). MAX LÖWY.
2. Clinical and Anatomical Considerations on Word-deafness. WILHELM BLOSEN.
3. Tuberculous Meningitis with the Signs of a Severe Ascending Transverse Lesion of the Spinal Cord; with Remarks on the Degeneration of the Posterior Roots. GEORGE STIEFLER.

1. *Symptom of Restlessness.*—Löwy finds that the hallucination of hearing one's name called is a frequent symptom in various psychoses, and is associated with a feeling of indefinite foreboding or threatened harm, or with the feeling of self-importance, and expectation of something about to happen. The hallucination usually occurs in the dark or when the patient is alone, and is that of a single low voice in which the person hears himself called by the first name or the name used in childhood. In mothers the word "mamma" is equivalent to the first name. This hallucinatory "Namensanruf" is a sign of restlessness and is closely allied to the introspections and forebodings of various psychoses, and may appear as one of the most important symptoms.

The author gives abstracts of numerous references to the hallucinatory "Namensanruf" in medical and classic literature, and a detailed analysis of the 41 cases which form the basis for the present monograph.

2. *Word-deafness.*—On the basis of a detailed clinical study covering a period of 1½ years in a case showing pure word-deafness, the author gives a résumé of the various theories regarding speech disturbances and word-deafness, and the clinical and anatomical considerations of some of the cases reported in the literature. Out of the 25 cases of pure word-deafness found in the literature, the author considers only 10 as really such, *i. e.*, free from any disturbance of speech, reading or writing.

The following résumé is given:

1. Word-deafness occurs in those conditions where the sound image of the individual spoken letters is more or less inaccurately or falsely perceived.

2. The longer and more complicated a word or sentence is, the more definite the word-deafness.

3. In word-deafness no definite letter or word was always correctly and no other word always incorrectly perceived.

4. There is no difference in the perception of substantives, verbs, etc.

5. Common words and those especially familiar to the patient were more easily repeated than other words.

3. *Tuberculous Meningitis.*—Clinical and pathological observations in a case of tuberculous meningitis, beginning with general symptoms such as weakness, headache and vomiting, followed by paresthesias in both feet and lancinating pains in the legs, and a girdle sensation. After four days, weakness of the extremities and finally complete flaccid paraplegia, with loss of tendon reflexes, anesthesia for superficial sensibility up to D. xii, disturbance of the deep sensibility, and sphincter involvement.

The entire clinical course of the disease appears to stand in contradiction to the medullary findings; the lumbar cord, except for a mild peripheral degeneration in the lateral columns, was intact. On the contrary, the observed symptoms have their full explanation in the severe

changes in the extra-medullary roots. Even macroscopically the entire extent of the cord is seen surrounded with a gelatinous formation, involving especially the posterior surface of the cord and of greatest extent in the lumbo-sacral portion. This gelatinous covering is made up of a mass of exudate lying between the layers of thickened arachnoid, completely blocking it and surrounding the nerve roots.

E. A. Sharp (Buffalo, N. Y.).

Allgemeine Zeitschrift f. Psychiatrie

(Vol. LXVIII, Heft 1)

1. Influence of Pregnancy, Labor and Puerperium on Chronic Psychoses. P. Naecke.
2. Contributions to Knowledge of Epileptic Psychoses. O. Hinrichson.
3. Duration of Life and Diseases among the Psychotic. Rudolf Ganter.
4. Work Therapy. Dees.
5. Is General Paresis a Modern Disease? E. Kirchoff.

1. *Pregnancy, Labor and Puerperium and the Chronic Psychoses.*—In 1894, the author wrote a paper in which he considered this subject on the basis of five illustrative cases. At that time he gained the impression that the future course of a chronic psychosis was not at all influenced by pregnancy, labor or puerperium. He is now able to discuss the subject from an experience in twelve further cases, whose histories he presents in outline.

These cases would seem to show: (1) That pregnancy, labor and puerperium have no certain influence upon the course of chronic psychoses (there was a possible exception in one case); (2) this a psychosis as such, does not act unfavorably upon the act of generation; (3) delivery usually takes place quickly, without artificial assistance and with little pain and hemorrhage; (4) the puerperium proceeds normally; (5) the mother usually troubles herself little about the child. From his own experience and from a study of the literature, the author has gained the impression that we have been too ready to connect both chronic and acute forms of insanity with the process of reproduction, as their incidence at this time may be only a coincidence. Nevertheless we cannot deny that this process may play a rôle. He last considers the following questions: (1) Is it justifiable to produce an abortion in a pregnant insane woman, and if it is, when? That in only very exceptional cases is an artificial abortion indicated seems to be the accepted opinion, in which our author coincides. The procedure may be considered when the psychical condition is alarmingly accentuated for the worse, as by severe excitement or conditions of anxiety, or when the pregnancy seems to be the immediate exciting cause of very disturbing delusions. Nevertheless there is no certainty that a discharge of the ovum will cause any improvement in the symptoms, which may in any event spontaneously subside. Besides, in insane persons the maintenance of asepsis presents greatly increased difficulty. As a prophylactic measure, in cases in which previous pregnancies have been accompanied with mental disturbance, abortion is to be rejected, since here again it offers no guarantee against an attack, while in acute cases, recovery may take place independent of abortion. In chronic cases, as in dementia præcox, general paresis, etc., the author can see no clear indication for the induction of abortion, but would admit a possible exception in the case of epilepsy, with increasing frequency of attacks.

(2) Should one, where a connection between pregnancy and psychosis seems certain, resort in preference to abortion to artificial sterilization by excision of both Fallopian tubes? This operation is certainly safer than abortion, but aside from the practicable impossibility of proving that an attack of insanity is bound to follow pregnancy in any given case, any operation in itself may be the exciting cause of a psychosis in one predisposed. At least, however, the operation discussed will remove any possibility of pregnancy and any chance of transmission of an insane heredity to a future generation. Each case will have to be decided upon its merits. The author in any event would reserve the operation for certain chronic degenerative psychoses and here more on social than on any other grounds.

(3) Is the child of an insane woman to be left to her to nurse? In the author's opinion, this can be done under careful watching, provided the woman has milk and shows no decided dislike for the child, as the danger of destruction of the child by the mother is under these circumstances small.

2. *Epileptic Psychoses.*—After a short introduction, Hinrichsen considers the subject under the following heads, each illustrated by suitable cases: (1) Certain Cases of Epileptic Insanity, (2) Periodic Psychoses More or Less Suspicious of Epilepsy, (3) The Relations of Epilepsy to other Psychoses, Especially to Manic-depressive Insanity. He cannot conclude that epilepsy and manic-depressive insanity spring from a common root, or are different manifestations of the same disease as has been suggested as a possibility. His general conclusions are as follows: (1) That epileptic psychoses in a large number of cases pursue courses which are not typical. On this account in its diagnosis, the recognition of convulsive attacks, or equivalent phenomena are in the majority of cases indispensable for forming a positive opinion; (2) epileptic psychoses can present nearly all the symptoms which are observed in psychoses in general; (3) from the psychical picture alone, without the somatic symptoms a diagnosis of epilepsy can be made in those cases presenting typical transitory disturbances of consciousness, coming on in attacks, with violent conduct, followed by partial or total amnesia, though here the diagnosis from katatonia can only be made after sufficiently long observation; (4) on account of the polymorphism of epileptic insanity, it is difficult to prove the existence of a combination of epilepsy with a functional psychosis, although the theoretical possibility of such a combination cannot be denied.

3. *Duration of Life and Disease in the Insane.*—A statistical study, from which the following conclusions are drawn. The average age on admission to the asylum falls for general paresis in the first half of the fifth decennium, for dementia præcox, epilepsy and imbecility in the fourth decennium, in the first half for the first two, in the last half for the last, in the seventh decennium for senile dementia and mainly in the first half of it. In general paresis the patients are, as a rule, committed within the first year of the disease. In dementia præcox, and also in senile cases the patients are usually kept at home for five years or longer. In epilepsy the disease has usually existed for years before admission. The average time spent in the asylum is longest in dementia præcox (12 years) and in imbecility, in epilepsy nearly as long. It is shortest in senile dementia (1.9 to 3.5 years), and in general paresis (1.8 to 2.5 years). In women these diseases last slightly longer than in men. The average age at death exceeds the decennium in which admission took place only in dementia

præcox and imbecility, in epilepsy reaching about the boundary. The women live a little longer. The average age reached is, in dementia præcox, a little beyond that found for healthy people. It would be interesting to investigate in the older asylums if the average age reached has advanced as it has in the healthy population. Possibly the newer methods of treatment prolong life. In the summer months the admissions predominate, in winter the deaths.

4. *Work-Therapy.*—An exposition of the therapeutic advantages of occupation, with a plea for the extension of opportunities—especially in connection with custodial asylums—for steady, and where possible, of productive occupation, for the patients, in gardens, farm and shop.

5. *Is General Paresis a Modern Disease?*—There is a general tendency to answer this question in the affirmative. The author takes up the subject from a historical point of view, especially taking count of the modern opinion that without previous syphilis there is no paresis. That syphilis is in no way exclusively a modern disease seems to be proven through the researches of a number of authors, but that general paresis must hence be also ancient, is not a necessary corollary, since it is known that among many races in which syphilis is endemic, general paresis is absent or excessively rare. While in the writings of the ancient physicians there are observations which make it probable that they knew something of the clinical picture of general paresis, which then existed, the matter is not very clear. An even greater obscurity envelopes the situation in the middle ages. General paresis seems first to have been definitely recognized in the nineteenth century and in France. Is it to be assumed that it did not exist in England, Germany and elsewhere? The author does not believe this, but thinks that it was not absence of the disease but slowness of recognition. The Schleswig Asylum was founded in 1820 and had as its first director, Peter Willers Jessen, who seems to have been a physician and observer of the first rank. He has left behind a number of clinical histories. Our author examines and analyzes 8 clinical histories of cases under Jessen's care, all of which except one appear to have been instances of general paresis. In three of these cases no history of syphilis appears.

C. L. Allen (Los Angeles).

Journal die Psychologie normale et pathologique

(Ninth Year, No. 1. Jan.–Feb., 1912)

1. The Natural Sciences and the Brain. J. P. Pawlow.
2. The Threading of Nervous Impressions. Paul Sollier.
3. Researches upon Error. Experimental Contribution to the Theory of Knowledge. Maurice Mignard.

1. *The Natural Sciences and the Brain.*—Without depreciating one iota the knowledge of the brain processes afforded us by the study of psychology, Pawlow pleads for a closer investigation of psychic phenomena by means of what he terms the "naturalo-scientific" methods of the laboratory, those methods that involve chemical, mathematical and similar means usually employed in the investigation of the physiological reflex functions of the body.

2. *The Threading of Nervous Impressions.*—Sollier discusses Lapicque's "new physiological theory of the emotions," which is based upon the manner in which a nervous impression, starting from the periphery, finds its way, in its progress toward the center, along the complicated and dis-

connected system of neurones. The question at issue is, how does this impulse select and follow its appropriate neuronic tract since the latter is in close juxtaposition to other tracts and is made up of a series of disconnected (anatomically) neurones? Sollier affirms that this question is more easily answered in connection with the brain tracts than it is with the long and short spinal tracts, though it is harder to answer it in explaining the psychic functions than in explaining the more purely physiological functions. Sollier accounts for the selective action of nervous impulses upon a concordance of processes resulting from a homochronism based upon resonance. In a word, the different periods of development that obtain among the neurones, making some older than others, leads to a selective difference among them when it comes to the question as to why this or that set of neurones is made the pathway of the nervous influx. The whole article, interesting and suggestive as it is, is nevertheless rather polemical and written to show that Lapicque has restated merely, in another way, Sollier's theory in regard to this threading of nervous impulses in and through the nervous system.

3. *Researches upon Error.*—This is a philosophical study, with four psychoanalytic illustrations, to show how errors arise in reasoning and lead to wrong conclusions.

Archiv für Psychiatrie und Nervenkrankheiten

(Vol. 49, No. 2. 1912)

XI. A Clinical and Pathologic-Anatomic Contribution to the Study of Acute Apoplectiform Bulbar Paralysis. G. Baschieri-Salvadori.
XII. A Case of Atypical Paresis with Genuine Epileptic Spasms and Korsakoff Symptoms of Weeks' Duration. P. Näcke.
XIII. Diffuse Carcinomatosis of the Pia-Arachnoid. D. Pachantoni.
XIV. Tuberculosis of the Spinal Cord. Carl Doerr.
XV. The Pathological Anatomy of the Korsakoff Symptom Complex of Alcoholic Origin. E. Meyer.
XVI. Myasthenia. G. J. Markeloff.
XVII. Pellagra (continued article). A. D. Kozowsky.

XI. *Pons Hemorrhage.*—The writer discusses a case of multiple hemorrhages into the pons of a type which he regards as relatively unusual. The clinical history and pathological findings are described in detail, and may be summarized as follows: The patient, a young woman, convalescing from pregnancy, was seized with fever, followed rapidly by a bulbar symptom complex, with death on the fourth day under conditions of respiratory paralysis. The case was one of acute bulbar paralysis caused by multiple hemorrhages in the pons, presumably due to septic embolism having origin in the lung. The lungs were secondarily involved through an endometritis.

XII. *Atypical Paresis.*—In this article Näcke describes a case difficult of diagnosis, in which occurred typical epileptic attacks and the Korsakoff symptom complex, together with an atypical dementia. Attention is called to the fact that with our increasing exactness in the diagnosis of syphilis, more is being learned of cases closely simulating paresis which yet may have a different etiology. The case in question was of a man free from venereal taint, and during much of his life an abstainer from alcohol. He had, however, become irritable and showed changes of temperament.

Following on this condition, he had a number of severe and perfectly typical epileptic attacks but without definite signs of paresis. In fact, throughout the entire course of his disease, the paretic aspect of the case was in the background. After undergoing a period of mental depression associated with alcoholic indulgence which bore a strong resemblance to the Korsakoff complex, he died with subnormal temperature, after a number of days of peculiarly clear mentality. The unusual features of the case are discussed at length with an attempt to differentiate the various conditions which appeared from time to time during the patient's illness. Among other conclusions, Näcke believes that it is very probable in most cases of death in paresis without fever and without pneumonia, a staphylococcus invasion is the cause if decubitus is present. He also believes that in cases in which apoplectic attacks take a prominent place, special attention should be given post-mortem to a study of the suprarenal capsules.

XIII. *Carcinomatosis of Pia-Arachnoid.*—Pachantoni, on the basis of a case of diffuse carcinomatosis of the pia-arachnoid, takes occasion to discuss the literature of the subject, which dates from an article by Eberth published in 1870. In the intervening time, very few observations have been published. The autopsy in Pachantoni's case showed carcinoma of the left ovary and of neighboring structures, carcinosis of the peritoneum, and meningeal hemorrhages. The chief interest centers in the meningeal hemorrhages, which a microscopic examination showed to be carcinomatous in character. It was found that the cancer cells of the pia were identical with those of the primary ovarian tumor.

XIV. In this article on *tuberculosis of the spinal cord*, Doerr calls attention to the relative infrequency of isolated tuberculous disease of the cord. He gives an admirable bibliography of the subject, comprising 240 references. He also reports a case of his own at length, and one given him by Professor Eichhorst. It is pointed out that there are two main varieties of spinal cord tuberculosis: (1) The solitary or conglomerate tubercle; (2) tuberculous myelitis. The genesis and nature of these two varieties is discussed on the basis of generous references to other authorities. The personal case reported is one of conglomerate tubercle of the spinal cord in a child of twelve. The boy was taken ill suddenly with headache and high fever, accompanied by vomiting. The symptoms were such that later typhoid or meningitis was suspected. The patient died after a relatively short illness, and the autopsy showed that the tuberculous process in the spinal cord was the oldest in the body. The second case, reported from Dr. Eichhorst's clinic, was a man of twenty-two, who suffered from conglomerate tubercle in the thoracic cord together with chronic tuberculosis. Valuable statistical statements follow regarding the age incidence and other matters relating to this special form of tuberculosis; a section on diagnosis, course, prognosis, outcome, and therapeutics, follows, together with a careful summary of the pathological anatomy. The article is exhaustive and has an added value because of its bibliography.

XV. *Korsakow's Complex.*—Meyer discusses the pathological anatomy of the Korsakow complex of alcoholic origin on the basis of a case minutely studied. Clinically the case presented the classical picture of Korsakow's disease developing from a delirium tremens. There was marked neuritis and alcoholic degeneration of the internal organs. Both acute and chronic alterations were found in the nerve tissues. In general in this disease changes are found attributable to the delirium tremens when that occurs in the etiology, together with others characteristic of chronic alco-

holism, and finally those which are referable to the Korsakow complex; in the later stages the two latter types of alteration are alone found. The differentiation of these must ultimately depend upon a painstaking study of the pathological study of simple chronic alcoholism.

XVI. *Myasthenia Gravis.*—In this article, Markeloff gives a comprehensive review of our present knowledge of myasthenia, supplementing his paper with a complete bibliography of articles appearing after 1900. The article represents rather a digest of the subject than an original contribution.

XVII. Continued article.

E. W. TAYLOR (Boston).

Book Reviews

EDUCATIONAL PROBLEMS. By G. Stanley Hall, Ph.D., LL.D. Published by D. Appleton and Co., New York and London.

"Train up a child in the way he should go, and when he is old he will not depart from it," is the astute advice of Solomon, but experience has shown that he frequently does depart from it. Is this the fault of the child or the trainer, or does not the proverb hold? Our greatest modern educator has written four volumes, which seem to justify Solomon's remarks; and in so doing has thrown more light on "the child," and on "training" than has hitherto been reflected from the works of pedagogues.

When, in 1904, Stanley Hall published his two volumes on "Adolescence," he prepared the mind of the educator for the work he has now put forth. He has shown that the normal child may vary greatly in physiological as well as mental development. He showed the variation in sexual development, and the natural reactions of various types of youth to the influence of society and religion, as well as the effects of punishments and rewards. He also pointed out the divergences from the normal, and the possible results of abnormalities.

Plainly the training of this complex and varied being, the child, deserved more than a maxim.

In his present work, "Educational Problems," Stanley Hall has addressed himself to the prepared teacher and the parent with a breadth of outlook that lays the whole subject fairly before them, viewing it from every side. In his first chapter, the Pedagogy of the Kindergarten, he discriminates with a sure touch between the essential principles on which it should be based, and the fads and false worship with which it has often been surrounded.

Any principal or teacher in selecting his school books, and establishing methods, will find much food for reflection in the chapter on Reading, How and What; Elementary Mathematics; Drawing. With a certain breathlessness he will wait to find all of his cherished theories considered historically, from their brilliant uprising in times remoter than he dreamed of, to their fall, but will find kept intact the little germ of reasonableness which made them appealing, and suggestions as to the occasions on which they are really applicable. All the fads and fancies, all the systems and short cuts are set forth at their true worth, with a summing up such as is found in his conclusions concerning the art of learning to read and write, which he says is "an almost purely mechanical product of drill, with almost nothing rational or educative about it. Hence most time in explaining is lost for it is far-fetched, and adds to the confusion in the child's mind."

But it is not merely the book education of the child, but his whole physical, moral, and social education that is dwelt upon. The chapters on the Pedagogy of Drawing and Pantomime and Music make a strong plea for these educative elements. He quotes a German writer as having written an article entitled "Dancing as the Chief Joy and the Highest Expres-

sion of Life" and dwells upon its hygiene, euphoric, social and moral possibilities; while concerning Music, he queries after a comprehensive discussion of the value of teaching, hearing, understanding music, "Do psychologists sufficiently realize that music may enfeeble, corrupt, degrade, let loose the worst things in the soul—that it may bring neurasthenia, loss of control . . . while on the other hand, good music may almost create virtue, and tune the heart to all that is good, beautiful, and true, bring poise, courage, enthusiasm, joy of life, tune up weakness and cadence the soul to religion and morals?"

The religious training of children is fully discussed with many common sense suggestions.

But the more original and stimulating chapters which approach the physician's domain of how to educate children to have healthy well balanced minds, and dependable nerves, are those which deal with Moral Education; the Pedagogy of Sex. They put clearly and succinctly all the subjects at present under discussion in the upbringing of young people to a sane and healthy attitude toward life.

The Budding Girl is a subject on which he writes most realistically, and minutely. Contrasted with the story book girl served to the daughters of to-day in magazine fiction, she is a very unfinished and crude product. But the value of his observations is that they are all taken from human youth as it is, and not as it ought to be.

The Discussion of Special Child Welfare Agencies is at this stage of Child Philanthropy very valuable, as it correlates the work done, and shows where blind philanthropic impulses can be directed into useful channels.

The chapter on Industrial Education is an excellent discussion of the fields of work open to boys and girls on leaving school, and the steps which lead to specialized labor and expert training, which lays special emphasis on the value of household training, especially cooking.

Interestingly, fully, and logically the educational influences of every kind at work in this country are set forth; the Moving Picture Show, the Institutional Church, the Sunday School, Settlement Work, Boy Scout Movement, Sunday Observance, Athletics, all the elements that make up the social pleasures of the child, and which at the same time work educationally with as much force, if not more, than the school work.

Not only the parent and teacher will be benefited by reading this work, but the physician, the minister and the youth himself—when he has reached the years of retrospect. So clearly does Stanley Hall see facts, and so plainly does he set forth the bearing of facts in life and character, that the boy or girl of twenty cannot help but be impressed that the problems of education are such that he or she can take hold of and help solve personally.

JELLIFFE.

LA PRATIQUE NEUROLOGIQUE. Publiée sous la direction de Pierre Marie. Par M.M. O. Crouzon, G. Delamara, E. Desnos, Georges Guillain, E. Huet, Lannois, A. Leri, F. Moutier, Poulard, Roussy. Masson et Cie, Paris.

In a prefatory note Dr. Marie explains how this work came to be. After some vicissitudes the original plan had to be slightly modified with the result that after about five years under the secretaryship of Crouzon the present most excellent volume of 1,400 pages was produced. It is called the practice of neurology to distinguish from a text book on the

one hand, with its formal presentation, and a diagnostics on the other which, considering symptom upon symptom, leads to a functional survey of neurological aberrations.

The present volume in large part deals with larger units than just symptoms and avoids the limitations of nosological partitions.

Dr. Poulard opens with a full discussion of Nervous Disorders of the Ocular Apparatus. It is a masterly presentation. Another chapter of similar excellence upon the Ear by Dr. Lannois follows. Then occur several shorter sections on Vertigo by Leri, Apoplexy and Coma, Morbid Sleep and Insomnia, Disorders of Writing, Aphasia, Apraxia, and Agnosia by Moutier.

The symptoms in the psychoses are discussed by Guillain and a chapter on Idiocy by Crouzon follows.

An excellent section on Sensibility by Roussy comes after this. It is one of the best things in the book. Short sections then take up Neuralgias, Disturbances of the Reflexes, Hemiplegia, Associated Movements, Paraplegia, Medullary Lesions, Family Periodic Palsy, Isolated Palsies, Peripheral and Central.

These are a little helter skelter, as are also the following sections on Diseases of the Larynx, Muscular Atrophies and Hypertrophies, Incoordination, Reëducation, Medullary Semiology, Pseudo-Bulbar Palsy, Myasthenia, Convulsions, Tremors, Choreas, Myoclonias, Athetosis, Tics, Cramps, Functional and Professional, Catalepsy and Catatonia and Hypotonia.

Still the order is a hodge podge—Trophic Disturbances, Hyperthermia, Urinary Disorders, Genital Disturbances, Digestive Disturbances, Yawning. The Hand, The Foot, Clinical Anthropometry, Gigantism, Infantilism, Nanism, Stigmata of Degeneration, Stigmata of Syphilis, Treatment of Syphilis—4 pages. Percussion and Auscultation of the Nervous System—2 pages. The Cerebrospinal Fluid, Ventricular Syndromes—an excellent section. Radiology, Application of Electricity, Hydrotherapy, Anatomical Histological Technic.

A veritable neurological grab-bag—mostly prize packages, but also not lacking in blanks.

Notwithstanding the almost incoherent arrangement and the rather loose construction, much profit can be obtained from the work. Its lack of system makes it like a series of individual articles, most of which are excellent. A few are worthless, their dictionary-like brevity detracting very much from the work.

JELLIFFE.

LA DEPERSONNALISATION. Par L. Dugas, Agrégé de Philosophie, et P. Moutier, Docteur en Medicine. Felix Alcan, Paris.

This small volume of the Contemporary Library of Philosophy contains an excellent old-fashioned résumé of those psychic states arrayed under that name. In the main the older views of Ribot, Sollier, Charcot and Janet are followed. No gleam of the flood of light cast by the lamp of psycho-analysis upon the riddles of personality is to be found. When it is recalled that this powerful searchlight has been utilized for now nearly 20 years, it is strange that a work dealing with personality and dynamic psychology should be innocent even of its existence. Such is, however, to be expected when one realizes how much small change there must be to keep the multitude busy.

JELLIFFE.

ELEKTROPHYSIOLOGIE MENSCHLICHER MUSKELN. Von Dr. med. H. Piper. Berlin, Verlag von Julius Springer, 1912. Pp. 163.

This is a study of the irritability of muscles by the application of electrical currents to the nerve. The particular conclusion of the author is that for the natural contraction of the muscle from the central nervous system in mammals and in man 50 impulses a second must be sent along the nerve.

As a special study in the electro-physiology of the nerve-muscle apparatus it is well worth while.

WHITE.

SPIROCHÆTES. A REVIEW OF RECENT WORK WITH SOME ORIGINAL OBSERVATIONS. By W. Cecil Bosanquet, M.A., M.D. W. B. Saunders Co., Philadelphia and London.

This small work contains an excellent summary of observations upon these allied organisms. It does not satisfy either the requirements of a strict botanical nor zoological critique but will prove useful from the purely descriptive side. The author allies many forms which are quite distinct and is disposed to regard them all as allied to bacteria. In general the work is far from being up to date.

JELLIFFE.

THE HEALTHY BABY. By Roger H. Dennett. The Macmillan Company, New York, 1912. Pp. 235; price $1.00.

This book is a simply written account of the baby and the common ailments to which it is subject and the way of meeting them. It contains, also, careful instructions as to feeding and suggestions as to methods of recording progress and development. There is a lot of information in the book for the lay reader.

WHITE.

ON THE PHYSIOLOGY OF THE SEMICIRCULAR CANALS AND THEIR RELATION TO SEASICKNESS. By Joseph Byrne, A.M., M.D. J. T. Dougherty, New York.

From practical experience in suffering from seasickness the author's attention became fixed upon the functions of the semicircular canals. We feel that it was fortunate that Dr. Byrne should have suffered, for as a result he has given us a very creditable and valuable book. One that evidences excellent scholarship and much judgment. It is, we feel, the best thing in English on this complicated and important field and deals not only with the more narrow practical issue of seasickness, but is a worthy contribution to the entire subject of the vestibular nerve.

JELLIFFE.

COMPENDIUM OF REGIONAL DIAGNOSIS IN AFFECTIONS OF THE BRAIN AND SPINAL CORD. By Robert Bing. Translated by F. S. Arnold. Revised by David T. Wolfstein. Rebman Company, New York.

In reviewing the German original we expressed the hope that this unusually attractive small manual might be put into English. This has been fulfilled and it affords us pleasure to reiterate our previously expressed opinion that Bing's Compendium is one of the most useful compendiums with which we are acquainted.

JELLIFFE.

Suggestion and Psychotherapy. By George W. Jacoby, M.D. New York, Charles Scribner's Sons, 1912. Pp. 355, price $1.50 net.

This work is a popular, interesting, smoothly written work that will appeal especially to the lay reader. There is nothing new in it, nor does there pretend to be. The subject is merely dealt with in a way that will be attractive to those readers who have no knowledge of it and who desire to acquire that knowledge in an attractive form with little exertion.

White.

Principles of Human Nutrition, A Study in Practical Dietetics. By Whitman H. Jordan. New York, The Macmillan Company, 1912. Pp. 450; price $1.75, net.

The first 175 pages of this work are taken up with the discussion of the chemistry of food and digestion, and from this as a basis the author goes on to discuss practical dietetics, the arrangement of dietaries, the selection of food, the relation of diet to different conditions of life such as age, work, etc., the economics of the question, and the consideration of special dietetic methods such as vegetarianism. Infant feeding is discussed at length, the character and food value of many commercial articles are entered into, and the principles involved in the preparation of food are also described. The work closes with chapters on sanitation, discussing milk, water, ice, etc., as sources of disease, and the preservation of foods.

White.

Der vestibuläre Nystagmus u. seine Bedeutung für die neurologische und psychiatrische Diagnostik. Prof. Dr. M. Rosenfeld. Julius Springer, Berlin.

In a short pamphlet of 56 pages Rosenfeld has brought together the chief facts relative to vestibular nystagmus in its relations to neurological and psychiatric diagnosis.

That no competent opinion of cerebellar disease can be formed without a knowledge of the vestibular reactions is being appreciated more and more. This short summary will prove useful in this as well as in other respects.

Jelliffe.

Bibliographie der Neurologie u. Psychiatrie für das Jahr 1910. Von der Zeitschrift f. d. gesamte Neurologie u. Psychiatrie. Julius Springer, Berlin.

This useful small volume contains the titles of 5,000 articles on nervous and mental disease, all carefully classified and ready for reference. It will be found of great service especially to those in reach of adequate library facilities.

Jelliffe.

Electricity. Its Medical and Surgical Applications, Including Radiotherapy and Phototherapy. By Charles S. Potts, M.D., with a section on Electrophysics by H. C. Richards, Ph.D., and a section on X-Rays by H. K. Pancoast, M.D. Lea and Febiger, New York.

There have been many manuals recently published dealing with the medical uses of electricity. This is an excellent addition to the list. The author has covered the entire ground in an acceptable and pleasing manner.

Jelliffe.

THE MECHANISM OF LIFE. By Stephen Leduc. Translated by W. Dean Butcher. New York, Rebman Company. Pp. 172; price $2.00.

This work does not pretend to solve the eternal enigma of life, but does make an effort to describe some of its mechanisms. For the most part the mechanisms described are those which occur as the result of the contact of solutions of different degrees of concentration. The author has studied all these phenomena in various solutions, for the most part inorganic, studying very largely the problem of what he calls osmotic growth.

The book is quite worth while in calling attention to the remarkable similarities between the inorganic and organic world, particularly in the matter of osmotic growth. It is of more than passing interest to note how this growth imitates plant forms, how we find processes analogous to nutrition going on, how injuries are repaired, periodic movements occur, and even how the microscopical structure simulates that of organic matter.

Particularly interesting is his chapter on karyokinesis. The author has been able to reproduce with great accuracy karyokinetic figures which are the result entirely of the diffusion of liquids, the spindles being the streaming of the diffusion liquid, the centrosomes the two poles of concentration. The excellent photographs show admirably the similarity between the organic and the inorganic figures. The work is extremely interesting and makes still less distinct the demarcation between the organic and the inorganic. It will be remembered that the author has set forth a physico-chemical theory of life and of spontaneous generation. Whether one believe or not in the author's views with regard to this question, the book under consideration is quite worth the reading.

WHITE.

BREEDING AND THE MENDELIAN DISCOVERY. By A. D. Darbishire, M.A. Cassell and Co., Ltd., New York.

For an attractive and at the same time sympathetic exposé of the chief facts of Mendelism this work of Darbishire can be warmly recommended. No other work with which we are acquainted presents the outlines of Mendel's discoveries so clearly and so pointedly.

Inasmuch as the study of human heredity has received such an impetus from the work of Mendel all interested in eugenic problems can read this work to advantage.

JELLIFFE.

UNTERSUCHUNGEN ÜBER LINKSHÄNDIGKEIT UND DIE FUNKTIONELLEN DIFFERENZEN DER HIRNHÄLFTEN. Nebst einem Anhang. "Ueber Linkshändigkeit in der Deutschen Armee." Von Dr. Ewald Stier, Stabsarzt am d. Kaiser Wilhelm Akademie. Gustav Fischer, Jena.

Of the many studies that have been made of the phenomena and causes of right and left handedness this is the most thorough and complete. We are prompted to say almost the only one worth while.

The author seeks to show that left handedness is of endogenous formation; heredity plays a large part in its development. He shows that the embryological data concerning the position of the fetus are insufficient. There is a thorough discussion of the brain morphology and the preeminence of the left side in ordinary right handed individuals. The relationship of the arterial supply to this fact is entered into fully.

One of the most important factors for right handedness Stier shows

is the fact of its predominance from early times, which sets a stamp, as it were, upon the acquisition of the habit.

In a later chapter the whole subject is brought into relationship with the subject of aphasia and the priority of the left hemisphere for the speech mechanism.

Altogether a stimulating and thoroughly profitable book.

JELLIFFE.

MEDICAL CHAOS AND CRIME. By Norman Barnesby, M.D. Published by Mitchell Kennerley, London and New York. Pp. 384.

This book is a vituperative arraignment of the medical profession based upon an unprecedented collection of hideous mistakes and blunders and moral crimes committed by its members. That such things happen and have happened it is probably not possible to deny, but from reading the book one would get a very false point of view of the profession as a whole from the specific examples that are given. There is undoubtedly wrongdoing in the profession just as there is among every other group of people in the world, and that wrongdoing is more reprehensible because it deals with questions of human health and life. Perhaps the most wholesome suggestion of how to correct these evils is contained in the quotation from Osler at the beginning of the first chapter. This quotation contains the gist of the whole matter and is the thing which the profession itself realizes. The great fault that lies at the base of all sorts of abuse in medicine is its commercialization. People have no business to enter the practice of medicine solely for the purpose of making a livelihood. Unless they have interests that are deeper than that they belong in some other line of endeavor.

WHITE.

L'AVARICE. ESSAI DE PSYCHOLOGIE MORBIDE. Par J. Rogues de Fursac. Felix Alcan, Paris.

This is one of the Contemporary Library of Philosophy of this well-known Paris publishing house. Everything that de Fursac has written has been worth while and this short treatise is no exception. The pursuit of a dynamic viewpoint is well illustrated. Avarice, the author says, is nothing but the exaggerated expression of a normal instinct. It is from this profitable point of view that the subject is studied. The work is to be recommended as enjoyable and worth while.

JELLIFFE.

SOME FUNDAMENTAL VERITIES IN EDUCATION. By Maximilian P. E. Groszmann, Pd.D. Boston, Richard G. Badger. Pp. 118.

Dr. Groszmann believes "that the processes of education cannot be wisely administered by those who possess only knowledge of the subject matter and common sense. Education is a science as well as an art, and the educator must have scientific knowledge of the growth and unfoldment of the powers of the being to be educated." The particular plea of the book is the revelation and development of the child through art activities, particularly drawing and molding in clay, motor activities which are far more valuable in the author's view than many of the abstract subjects such as grammar and mathematics, which are taught, in his opinion, years before they should be.

WHITE.

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Original Articles

MYASTHENIA GRAVIS[1]

By Professor M. Allen Starr, M.D., LL.D., Sc.D.

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In attempting to gather information upon this subject apropos of three cases seen this winter, I have found very little literature of a general nature but a large number of single cases recorded in the past ten years. The only general summaries of the disease are those published by Bramwell and Campbell in *Brain,* 1900, by Oppenheim in his monograph in 1901, which cover about the same cases, about sixty in number; a summary by Henry Hun in the *Albany Medical Annals,* 1904, in which about twenty cases were added to the collections already named; an article by Ketly in the *Deut. Zeitschrift für Nervenheilkunde,* July, 1906; and an article by Palmer in the *Guy's Hospital Reports* in 1908, where the cases since Oppenheim's cases up to that date (120) are summarized. Since that time single cases have been reported in various countries and published in different languages, so that it has now been possible for me to gather about 250 cases in all for the purpose of analysis. I have thought it wise to bring these together and state the results of this analysis briefly, because I find that many erroneous ideas are extant with regard to this disease, based upon

[1] Read at the Thirty-eighth Annual Meeting of the American Neurological Association, May 30, 31, and June 1, 1912.

the study of individual cases and that generalizations have been made with too little basis in the past.

First, Sex.—Of the 250 cases, 142 were females, 108 were males. The supposed preponderance of females is not great.

Second.—The age of onset is shown in the following table:

Age.	No. of Cases.
1–10	5
10–20	34
20–30	85
30–40	58
40–50	40
50–60	12
60–70	6
70–80	1

The youngest case on record is that recorded by Mailhouse, a child 2 years 9 months old. It is evident that the age of greatest frequency is between 20 and 30, but it is also evident from the table that no age is exempt, the oldest case recorded having been 72 years old.

Statements have been made that this was a disease of young adult life only, but these statistics show that this is erroneous.

Symptoms. The Symptoms of Myasthenia Gravis.—It is well known that for many years this disease was supposed to be a form of bulbar palsy, because of the predominance of symptoms referable to the cranial nerves. It is true that the cranial nerves are chiefly affected and in the majority of cases are affected first in the disease. Thus, ptosis or double vision has been recorded as the first symptom in 40 per cent. of the cases. Some difficulty in the action of the lips and of the face leading to a difficulty of movement and unnatural facial expression and a peculiar appearance described by Gowers as the "nasal smile or snarl," due to a weakness of the orbicularis oris have been the first symptoms in 4 per cent. of the cases. Difficulty in speech has been recorded as the first symptom in 16½ per cent. of the cases, and it is interesting to note that a paralysis of the vocal cords discovered by the laryngoscope by laryngologists has been the first symptom in 8 cases, forming 3 per cent. The difficulty in speech is more commonly due however to paralysis of the tongue or of the lips, and as this occurs early both in myasthenia and in bulbar palsy it is not surprising that in a very large number of cases the diagnosis of bulbar palsy has been the only diagnosis possible at first. Diffi-

culty in swallowing has been recorded as the first symptom in 8½ per cent. of the cases. This may consist of an inability to swallow solid food, as in one of my cases, or it may even result in a regurgitation of fluid through the nose, owing to the paralysis of the palate and pharyngeal muscles.

It is therefore evident that some affection of the cranial nerves has been the first symptom in 69 per cent. of the cases recorded and hence the constant tendency to confound this disease with true bulbar palsy. A very striking point of contrast, however, between true bulbar palsy and myasthenia is afforded by the fact that in myasthenia some affection of the ocular muscles or ptosis or inability to close the eyes are among the very earliest symptoms, while in true bulbar palsy ptosis is very unusual and double vision very rare. Nystagmus also occurs in myasthenia and is not commonly observed in bulbar palsy.

It is not generally appreciated that this disease may begin however without bulbar symptoms. In 31 per cent. of the cases the records show that the first weakness was felt in the arms or in the legs, most commonly in the legs, and that for several days, weeks, or even months before any cranial nerve symptoms developed, a very decided weakness of the limbs, leading to an almost complete paralysis, had occurred. In very many cases this weakness, being of a functional nature not attended by atrophy or fibrillary twitchings or reaction of degeneration, and not attended by any uniform disturbances in the reflexes either of the nature of the loss of reflex or in the exaggeration of reflex, has led to the diagnosis of general neurasthenic weakness or of hysteria. And even in some of the carefully observed cases in German hospitals and English hospitals this has been the first diagnosis made. The subsequent course of the cases, the extension of the weakness to the muscles of the neck so that the head had to be artificially supported and then the development of cranial nerve symptoms have led to the correct diagnosis of myasthenia. I wish to call particular attention to the form of myasthenia in which weakness of the limbs without any cranial nerve involvement constitutes the predominant symptom, because I believe that many cases of this character have escaped recognition, and this is the mode of onset in one third of the cases.

The characteristic of all these forms of paralysis both in the domain of the cranial nerves and in the limbs is the fact generally

observed of very easy fatigue on exertion and the recovery of power under rest. It is this rapid exhaustion under exertion of any kind which leads to the characteristic myasthenic reaction of the muscles to electricity first recognized by Jolly. The exercise of the muscles produced by a faradic current is a very active and trying and exhausting form of exercise, and the muscle wearies under it until finally it fails to respond. In three of my cases I noticed a similar increasing fatigue on percussion of the muscles and also on percussion of the tendons eliciting the knee jerk, ankle jerk and wrist jerk. These reflexes progressively diminished in intensity after repeated percussion of their tendons, until in one case the knee jerk was finally abolished after about 40 percussions, but returned after 20 minutes of rest. The irritability of the facial muscles, of the trapezius and of the deltoid to the mechanical excitability by percussion was also successfully diminished in two cases. It may be stated therefore that anything which fatigues the muscle in myasthenia is capable of producing paralysis.

While sensory disorders or disturbances have not been found a number of recent observations have shown that the senses of sight and hearing can be exhausted by the effort of constant looking at a light or constant reading. Several observers have found that the optic nerve is weakened unduly, that the visual field is markedly contracted after such effort, both to color and to light and the acuity of vision is diminished, probably owing to the weakness of the muscles of accommodation. In two cases it has been recorded that a diminution of the range of hearing of sounds of a high pitch has been noted, though this may be explained as well by a fatigue of the tensor tympani as by an actual fatigue of the auditory apparatus. These symptoms require investigation.

A symptom to which very little attention has been given, but which has been recorded in an astonishingly large number of cases, both as an early sign and as a constant symptom, is headache. This is generalized and is increased by mental effort or by physical exertion. It is not unlikely that it is due to the poison which produces the disease.

Pathology.—While an enlargement of the thymus gland has been observed in about 28 per cent. of the cases examined, its absence in 72 per cent. of the cases seems to afford positive evidence that it is not essential to the development of the disease. In almost all recent autopsies the infiltration of the muscles and

all of the internal organs of the body by small cells clustered about the lymphatic system and infiltrating the tissues widely, which have been termed lymphorrhages, has been observed. The source of these small cells is undoubtedly the lymphatic system, but no explanation is as yet afforded of their nature or of the reason for this exudation. The pathology of the disease is therefore still obscure.

Course.—The course of the disease is extremely variable. A number of cases have been recorded of death within 10 days of the onset not only in an original attack but also in relapses; a rapid exhaustion of the respiratory muscles or choking from inability to swallow being the actual cause of the fatal ending. In a large number of the cases, 45 per cent. of the cases here collected, death occurred within six months of the onset, a slowly progressing weakness resulting in the fatal ending. In very many cases the history is of a sudden onset followed by apparent recovery lasting from four to six months or even eighteen months and followed by a relapse which may be fatal or which may be recovered from to be followed again by a return after a remission. It is difficult to get any statistics with regard to the course of the disease, because the majority of the cases are reported while the patients were still living and the final result is unknown. That the disease is an extremely serious one is shown by the large percentage of fatal terminations within a year of the onset. The longest case so far recorded had had the disease at intervals for eighteen years.

Diagnosis.—The diagnosis is made from the rapid development of double vision with ptosis of one or both eyes; difficulty in speech and in swallowing and a weakness of the muscles of the face, producing a typical lack of expression under varying emotions. Secondly, from the development rapidly of a condition of extreme weakness in the muscles of the limbs and in many cases of the head and neck. Thirdly, by the very rapid fatigue in all muscles on any exertion. Fourth, by the appearance of the electrical myasthenic reaction in the muscles; and lastly by the variation in the intensity of the muscular weakness and its prompt improvement under rest. Negative symptoms of equal importance are the absence of fibrillary tremors in the muscles affected; the absence of muscular atrophy; the absence of the reaction of degeneration and the absence of sensory symptoms.

The diagnosis from bulbar paralysis may be made when the following points are considered. Bulbar palsy begins either as the result of an apoplectiform attack followed by permanent symptoms or much more commonly by a slowly advancing paralysis beginning in the tongue, lips and larynx and advancing after several months to the face but rarely affecting the motions of the eyes. In a bulbar paralysis the muscles that are weak soon atrophy so that the tongue is very atrophic and is the subject of fibrillary twitchings and the face appears markedly thin. In bulbar palsy the orbicularis palpebrarum is frequently affected and the patients cannot close their eyes. Ptosis is not frequent, while in myasthenia ptosis and ocular palsy are the first symptoms in 40 per cent. of the cases.

In amyotrophic lateral sclerosis the symptoms may begin with a bulbar palsy, but here the history is that of a chronic, slowly advancing bulbar palsy, such as that just described, and when weakness develops in the arms it is attended by atrophy and by spastic rigidity in the legs, by increased mechanical excitability in the muscles and a marked increase in the reflex activity. The rapid tiring of the muscles under exertion and the myasthenic reaction in the muscles to electricity are not observed in amyotrophic lateral sclerosis.

Atrophic paralysis beginning in the legs or arms and advancing slowly might perhaps be mistaken for the type of myasthenia which begins in the limbs. But this disease is slowly progressive and does not recover under rest in bed. Muscles that are affected undergo a progressive atrophy and they do not show the myasthenic reaction.

The fact that many of these patients are rendered markedly nervous by their long-continued illness and the fact that the symptoms of the disease tend to vary in intensity from week to week, showing great improvement under rest, has led to the diagnosis of hysteria in some cases. Hysterical weakness, however, improves generally after exercise and does not disappear after rest. Hysterical ptosis is due to a spasm of the orbicularis, never to a paralysis of the levator palpebræ. Strabismus is never present in hysteria unless congenital. The difficulty in deglutition in hysteria is caused by a spasm of the throat and liquids are actively rejected through the mouth, while in myasthenia the paralysis of the throat leads to a regurgitation of fluid through the nose. In

hysteria the difficulty in talking takes the form of a whisper, articulation itself being good, while in myasthenia the speech is slurring and indistinct and is manifestly due to a weakness of the muscles of the tongue and face. Paralysis of the vocal cords is not seen in hysteria. Dyspnea if it occurs in hysteria is attended by rapid shallow respirations and an occasional spasm of the diaphragm. In myasthenia the weakness of the respiratory muscles leads to continued difficulty in breathing, cyanosis and accumulation of mucus in the throat. In hysteria there is no myasthenic reaction in the muscles.

A post-diphtheritic paralysis may present some symptoms resembling myasthenia, for in that condition the ocular muscles may be paralyzed and also the muscles of swallowing. The history of the onset after an attack of sore throat, the very rapid development of the paralysis after diphtheria, the absence of ptosis in diphtheria and also the absence of any paralysis of the face or mouth; the loss of knee jerks in diphtheria and the appearance of ataxia in the limbs; and the fact that in diphtheritic paralysis rest does not improve the condition, are the points of differentiation.

Cerebral tumors of the pons and crura may give rise to local symptoms somewhat resembling those of myasthenia gravis and headache is present in both diseases, but in tumors the course of the symptoms will be much more progressive and severe than in myasthenia. Vertigo and vomiting will occur early and the early appearance of optic neuritis will make the diagnosis of a tumor clear.

Treatment.—Many forms of treatment have been employed in myasthenia. The use of the organic extracts, especially of thyroid gland, of pituitary gland and of parathyroid gland, seems to have been universal in the past ten years. But so far as the results are recorded this treatment has not been successful. It was founded upon the supposition that the origin of the disease was a hypertrophy of the thymus gland and that thyroid gland counteracted the effect of thymus gland. The results are disappointing, as the theory was fallacious.

Strychnine has been employed by almost every observer and the reports of the effects are conflicting, it being supposed by some that the effect was good while others have seen an increase of symptoms during its administration. Soamin tried carefully

in several hospital cases has proven useless. Calcium lactate has been employed in a few cases with some apparent benefit. In a case of my own it seemed to be of distinct service. Its use is founded on the basis of the observation of Pemberton, that the excretion of calcium is greatly increased during the disease. This observation requires confirmation.

All authorities agree that rest in bed without use of the eyes and without talking is essential to any improvement.

Personal Cases of Myasthenia

Case 1. Male (26). Good family history. No syphilis. About March 1st noticed that he saw double on looking to the right. A few days later he found his voice unnatural and consulted Dr. McKernon, who found a partial paralysis of the left vocal cord and a relaxation of the pharynx. The following week noticed an increased failure in his voice and a general weakness of the entire body, which annoyed him, as he is a very muscular man and a great walker. On the 25th of March made a great effort in a long public speech after which he found himself exhausted, and on March 30 Dr. McKernon found a total paralysis of the left vocal cord and arytenoid muscle, deviation of the tongue to the left on protrusion, and a relaxation of the facial muscles, depriving his face of expression. These conditions were confirmed on my examination March 30. His pupils reacted to light. There was a slight lateral nystagmus present on turning the eyes to any direction. Imperfect motion of the eyes in convergence. Double vision beyond three feet on both sides; no ptosis; face flat; little expression in talking; speech thick and hoarse. Tongue protrudes to the left without fibrillary contractions but can be moved in all directions. Great difficulty in swallowing which has been present for ten days. Now able to swallow liquid only and has to throw his head back in the act of swallowing. Feels weak in all his muscles, especially about the shoulders and legs. Attempts to lift the arms soon cause such fatigue that it is impossible to get them above his head. Walks with difficulty dragging the left leg slightly. It is impossible for him to cross the left leg over to the right without taking hold of it with his hands. Both knee jerks exaggerated, no ankle clonus. Knee jerks diminish on repeated percussion. Mechanical excitability in all the muscles good, but diminished rapidly under repeated percussion. No sensory disturbances. Pulse 100. No myasthenic reaction in the muscles. Headache was complained of during the first six weeks of his illness.

Under rest and the use of 15 grains of calcium lactate three times a day with glycero-phosphates and strychnin $\frac{1}{60}$ three times a day, a slow and steady improvement occurred until by the first

of June all symptoms had disappeared. On one occasion during this time after long use of the eyes double ptosis occurred for several hours. During the entire progress to recovery any physical effort was followed by undue fatigue and rapid exhaustion, and even in the last week of May a walk of 200 feet caused great fatigue in the legs.

CASE 2. Female (21). This girl has been a semi-invalid for the past seven years. Her attack began at the age of fourteen with double vision and general weakness. She was in the Berlin Hospital under Oppenheim's care at that time for three months. At the age of 15 she had a second attack with double vision, inability to swallow and to talk and general weakness of both arms and both legs. She again was taken to the hospital in Berlin, and remained for six months. She recovered, excepting for the double vision and inability to move the eyeballs. In January, 1912, when I saw her, she had paralysis of all the muscles of the eyeballs, her eyes being fixed and all attempts at vision being attended by a motion of the head rather than of the eyes. She had double vision, no ptosis. She has difficulty in swallowing and has to throw her head backward in order to get any food down. Her voice is weak but the tongue protrudes straight. Her facial expression is markedly impaired by the flatness of her face. All her muscles are weak and tire quickly but are not atrophied. Walks well, has no ataxia or sensory disturbances, knee jerks exaggerated.

CASE 3. Female (42). This woman, who has been a hard-working Sister in a convent, has developed in the past year general muscular weakness in her legs, making it difficult for her to go upstairs, and recently in the hands, making it difficult for her to lift weights. Two months ago she began to have double vision without ptosis but with some divergence of the eyeballs and inability to converge. Within the last month she has had difficulty in talking and in swallowing and her voice is noticeably weak. She was seen in January, 1912, and remains at present (June, 1912) in about the same condition, being exhausted easily on effort but recovering her power fairly under rest. She has not been improved markedly by thyroid.

BIBLIOGRAPHY OF MYASTHENIA

Oppenheim. Berlin, 1900. 60 cases.
Campbell and Bramwell. Brain, 1900. 18 cases.
H. Hun. Albany Medical Annals, 1904. 33 cases.
L. Boudon. Thèse de Paris, 1907. 10 cases.
Palmer. Guy's Hospital Reports, 1908. 126 cases.

The following cases have been collected by me, none being included in the above mentioned lists, and all duplicates in above have been excluded.

1905

C. K. Mills. St. Louis Med. Fortnightly, June 26. M. 36, 6 mos., then stationary 1 year.

1906

Kelly. Deut. Zeitsch. f. Nerven., 31, 241. M. 23, 4 years to death, autopsy negative; M. 23, 7 mos., duration, living still.
Osain. Monatschr. f. Psych., p. 526.
Kleppel. Arch. gen. de Méd., 353.

1908

Marinesco. Semaine Méd., XXVIII, 416. F. 21, F. 31, 2 sisters. 1 died after 1 yr., thymus large.
Montet and Skop. Monatsschr. f. Psych. u. Neurol., Juli. M. 54, began at 31, 23 yrs. duration, living.
Mandelbaum and Celler. Jour. Exper. Med., April. M. 52, duration 6 mos., thymus large, lymphorrhages.
Booth. Jour. Nerv. and Ment. Dis., 11. M. 11, 1½ yrs. to death, large thymus.
Chvostek. Wiener Klin. Woch., 37. F. 32, with myxedema, cured with thyroid, 1904–7.
Grund. Deut. Zeitschr. Nervenheilk., XXXIII. Duration 6 yrs., no cranial nerve symptoms.
Rennie. Rev. of Neurol. and Pysch., No. 4. F. 22, with Basedow's; cites 4 other cases.

1909

Kauffman. Journal f. Psych. u. Neurol., XLV. M. 31, 11 mos. duration, no remission, death.
Warrington. Rev. of Neurol., p. 319. M. 25.
Stcherbak. Revue Neurol., Nr. 9. F. 25, 2 yrs. duration to report.
Lacquet et Boudon. Soc. de Neurol., March 13.
Claude. Jour. de Phys. et Path., 2 July.

1910

Pemberton. Amer. Jour. Med. Sci., June. M. 55, recovered, living 3 years later.
Bruce. Rev. of Neurol. and Psych., September. F. 54, 3 mos. onset, 9 mos. to death, no thymus, no lym.
Vienderowitch. Neurol. Centralbl., 258. M. 30, 1 yr. continuous.
Petz. Berlin Klin. Wochen., Apr. 4. F. 19, first attack at 13, then free 6 yrs., now second attack, 4 mos. duration, living.
Paul. Bost. Med. and Surg. Jour., No. 9, p. 162. M. 26, slow onset, death in 6 mos.
Schlapp and Walsh. Jour. Nerv. and Ment. Dis., 552. F. 24, fright as cause, died in 6 mos.
Graves. Texas State Med. Jour., January. M. 41, death in 4 mos., thymus tumor with lymphatic leucemia.

1911

Roussy and Rossi. Neurol. Centralbl., 522. F. 10, 1 yr. to death, thymus large lym.
Kennedy. Jour. Nerv. and Ment. Dis., Nov., 690. F. 24, 4 years' duration, living.
Atwood. Jour. Nerv. and Ment. Dis., 232. M. 22, duration 15 mos., living.
E. Schultze. Deut. Med. Wochen., Feb. 9. F. 33, 9 mos. to death, autopsy negative.
Acker. Jour. Amer. Med. Assoc., May 27. F. 16, duration 9 mos. to death.
Symes. Brit. Med. Jour., January 21. F. 21, death in 12 days, general symptoms, diag. hysteria, thymus large.
Markelo. St. Petersburg Med. Woch., No. 4, p. 50. F. 23, found 28 other

cases with muscular atrophy, found urotoxin before each attack and after exercise.

Finley and Smith. Neurographs, I, No. 3, 178.

Wilson. Lancet, July 15. M. 41, gradual course, death in 6 mos., states thymus enlarged in 20 per cent. of cases.

Hastings. Proc. Royal Soc. of Med., Vol. 4, p. 39. M. 14, vocal cords in cadaveric position, July to Nov., living, question of diphtheritic paralysis discussed.

Ground. Lancet, Jan. 28. M. 51, April to Nov., death respiratory paralysis, lymphoid cell infiltration everywhere.

Moorhead. Dublin Jour. Med. Sci., 163. F. 25, rapid increase 6 mos., then stationary 18 mos., then death in 10 days. Atrophy of muscles, thymus large, few lymph.

Kelly. Dublin Jour. Med. Sci., June 17. M. 13.

1912

Markeloff. Arch. f. Psych., XLIX, 482.

THE RELATIONS OF THE FIFTH NERVE[1]

By M. A. Bliss

ST. LOUIS, MO.

It is my desire to offer a preliminary statement as laying a foundation for a report of some, as yet, unfinished work,—unfinished because it has been impossible to obtain clinical material which could be followed by post-mortem examination. To draw any conclusions from the anatomical data to be described below, it will be necessary to obtain a number of heads of patients who have, during life, suffered from painful seizures variously called neuralgia, migraine, etc., to decalcify and slice them as well as to identify by the microscope, the extensions of inflammatory influence we suspect to take place.

There are some anatomical relationships, varying widely, in the arrangement of the sphenoidal and post-ethmoidal sinuses, and the cavernous sinus, which, while well known, have not found their way into neurological literature as possibly explaining why we get such a variety of pain complexes from disease of the first mentioned cavities. In other words, the question we are asking ourselves is whether the neuralgias are not present oftimes as the result of an accidental anatomical variation.

It is not infrequent to find the hollow of the sphenoid almost entirely occupied by the right or the left sphenoidal sinus,—in one case well away from the branches of the fifth, in another in juxtaposition.

The cavernous sinus bearing the third, fourth and first divisions of the fifth and the sixth may be separated by a thick wall of bone from the sphenoid sinus, or it may bear such a relation as to bring them all, except the sixth, directly against a thin shell of bone, forming the outer wall.

With Dr. Greenfield Sluder, I have examined a number, perhaps 50 or more, of decalcified heads to determine whether there might prove to be an explanation in these relationships of the puzzling pain complexes of sinus disease.

We have as yet been unable to obtain clinical material corre-

[1] Read May 31, 1912, before the American Neurological Association.

lated with post-mortem material sufficient to establish any definite data. But it is certain that in many of the decalcified heads it is possible to show all three branches of the fifth in relationship with diseased sphenoidal and post-ethmoidal sinuses.

The cavernous sinus varies greatly in its length, height and breadth. At times it is almost two-thirds enclosed by a burrowing sphenoidal sinus and lies snug against its outer wall. The cavernous sinus may extend backward so as to be brought in relation with the pocket of Meckel and forward to the sphenoidal fissure. In short, we wish to call anew attention to these variations, and to suggest that an explanation of some pain complexes may be found in congenital malformations plus post-ethmoidal sphenoidal sinus disease.

It is not our idea that all the pain complexes of the fifth may be explained on this basis. It is certain that the examinations of the ganglion of the fifth and of the root and of the nuclei have not yielded an explanation at all satisfying of the clinical pictures which distress the neurologist and agonize his patient. What we do, is to remove the ganglion or to inject with alcohol one or more branches,—in the former case subjecting the victim of the neuralgia to an extremely severe and dangerous procedure. In the latter, we promise a few weeks or months of relief with the comforting assurance that we can do the stunt over again if the pain returns, which it usually does. There may be an irreducible minimum of cases which we cannot explain. What we are attempting is to reduce the minimum.

TERMINAL STATES IN PELLAGRA RESEMBLING GENERAL PARESIS, WITH REPORT OF FIVE CASES[1]

By Eugene D. Bondurant, M.D.

MOBILE, ALA.

The growing importance of pellagra as a neurological problem is sufficient justification for offering you the imperfect observations which constitute the basis of this paper.

In preliminary explanation, it may be stated that six years ago it was my fortune, be it good or bad, to see the cases of pellagra in the Alabama State Insane Hospital for negroes at Mount Vernon, the subsequent report of which cases by Dr. George H. Searcy constituted the first suggestion of the presence of pellagra in America.

The interest awakened at that time has been maintained by the rather frequent discovery of pellagra among the patients presenting themselves for treatment for nervous disorders.

Three years ago when the writer made a report to this Society upon the nervous disturbances met with in pellagra, nine cases were reported. Since that time something more than forty additional cases have come under his observation. Of this half hundred cases of pellagra, five presented symptoms strongly suggesting paretic dementia, and are briefly reported below.

Case 1. Male, aged 40. Syphilis denied. No Wassermann made. Patient grew forgetful and irritable, neglected his work, had periods of excitement and talkativeness. Progressed within twelve months to a condition of mental enfeeblement which incapacitated him for self support. He exhibited indistinctness of articulation, with slurring of long words, tremor of lips and tongue, ataxic incoördination in both upper and lower extremities, with a quite characteristic gait. Knee jerks, as well as wrist, elbow and ankle jerks absent. Pains of a darting, stabbing variety in legs, and in lower abdomen and groins. Partial tactile anesthesia and slowing in rate of transmission of painful impressions. Distinct impairment of position sense. No optic

[1] Read by title at the meeting of the American Neurological Association in Boston, May 30, 31 and June 1, 1912.

atrophy. No pupillary defects. The case resembled an ataxic form of general paresis, and this diagnosis was made. There was progressive deterioration in general health, as well as in psychic and nervous condition for nearly a year. Patient then began suffering from diarrhea, and profuse salivation, mucous surfaces of tongue and lips red and sore, had indigestion, vomited several times, and a few weeks later developed a characteristic pellagrous erythema on knuckles, wrists and back of neck. The patient grew more feeble, bed ridden and helpless, had hemorrhages from the bowels, and stomach, and died eighteen months after he was first seen.

CASE 2. Male, 37 years of age, physician, had been intemperate and had become addicted to morphine. Syphilis strenuously denied. Patient was dull and apathetic, forgetful, could not attend to his practice, made many mistakes. There was fibrillary tremor of tongue and lips, some incoördination of upper extremities, a shuffling unsteady but not characteristic gait, slurring speech. All tendon reflexes exaggerated. Under treatment the patient was relieved of the effect of his drug addiction, but remained in a state of drivelling dementia for some time, presenting the appearance of a fat, hopeless paretic. With the oncoming of warm weather he began suffering from looseness of the bowels, and his lips and tongue became red and sore. Salivation abundant. Two weeks later a typical mild pellagrous erythema appeared on his face, elbows, wrists and hands. The erythema commenced to fade in a few days; was gone in two weeks, and the man began improving mentally and physically. Within a few weeks more he was rational, seemingly in good health, and while slightly dulled in higher psychic qualities, to all intent and purposes well. Report six months later was that he had resumed his practice and was "entirely well."

CASE 3. Man, 42 years old, accountant, previous health good, syphilis denied. One year ago began neglecting his business and making mistakes in figures. Grew irritable and his disposition changed. Had an attack of "dysentery"; eruption denied. Progressive deterioration in mentality, until he was forced to give up work. Had a convulsion one day. A few months later had a series of convulsions, diagnosed uremic by one physician, paretic by another. A month later had another series of similar convulsions, and immediately thereafter came first under observation of the writer. Patient then was demented, silly, incoherent, cheerful, emotional. Slurring articulation. Fibrillary tremor of lips, tongue, and muscles of trunk and extremities. Tendon jerks exaggerated. Double ankle clonus. One pupil larger than the other. No albumin in the urine. Wassermann negative with blood. Repeated with cerebrospinal fluid, again negative. Patient was unable to walk alone, had difficulty in feeding himself, but was well nourished and had no gastro-intestinal symp-

toms, and no erythema when seen. Inquiry of a physician who had treated him the year before he began to show mental deterioration elicited the statements that the man then had diarrhea, salivation, and a red eruption on hands, and the opinion was expressed by this physician that the case was undoubtedly one of pellagra. The patient slowly improved for a few weeks, then had a series of epileptiform convulsions and died. No autopsy permitted.

Case 4. Male, 34 years old, lawyer, syphilis 12 years ago. Ill health for two years, with repeated stomach trouble and diarrhea with emaciation. Eruption ("eczema") on hands a year ago, disappearing in a few weeks. Eight months ago had a transient attack of unconsciousness, and has never been so well since. Has grown excitable, easily confused, forgets simple tasks, is unable to attend to his legal work, is unstable, introspective, and easily angered. Growing steadily worse. When first seen he was coherent, but could not fix his attention long, was apathetic, careless, slurred his speech, showed marked tremor of lips and tongue, pupils unequal, gait slightly spastic and unsteady, all tendon reflexes much exaggerated. Under mercury the patient rapidly improved in weight and in mental condition, but as the warm weather came on, a pellagrous erythema appeared on his hands and elbows, his tongue and lips grew sore and red, he suffered from salivation, had diarrhea, and his mental state grew worse. He then had a severe epileptiform convulsion, remained unconscious for 36 hours and died.

Case 5. Male, 48, farmer, family and personal history good. Lues denied. For some years has had attacks of "summer diarrhea," and has had "sore mouth," and eczema on hands. Two years ago had a "slight stroke," losing partial use of one side. Recovered entirely. One year ago had a convulsion, and was treated for "epilepsy." Since then he has had other fits, and has shown a change in disposition, with mental deterioration, confusion, despondency, emotional instability, forgetfulness, irrational conduct. His speech and voice changed, he became unsteady in his gait and his general health suffered. When first seen he complained of headache, had exaggerated tendon reflexes, spastic gait, fibrillary twitchings in muscles of tongue, lips, face and to a lesser extent, extremities and trunk; showed much muscular weakness, and probable beginning muscular atrophy. Speech indistinct, with much elision. Mental state one of dementia and excitability. Pupils unequal. During the two months he remained under treatment he had three epileptiform convulsions, but improved steadily in general health and in mental condition. He had little gastro-intestinal disorder, but exhibited for several weeks a characteristic pellagrous erythema on elbows, wrists and knuckles. Wassermann negative. At the present time, eight months after he first came under the observation of

the writer, he is reported as "better" but his letters indicate mental enfeeblement and confusion.

Of the above cases, 1, 2 and 5 are without doubt instances of pellagrous paresis. No. 3 was diagnosed paresis by several physicians, including myself, despite the negative Wassermann. It is here included because of the last named fact, and because a rather definite history of a former pellagra was obtained. Case 4 had probably a luetic paresis, but *also had pellagra* which doubtless modified the clinical picture and the course of the disease.

While fully aware that generalizations based upon a few cases are of necessity faulty for purposes of orientation and discussion some general comment upon the nature of what we may designate pellagrous pseudo-paresis may be justifiable.

The somatic symptomatology is almost identical with that of classic general paresis. The exaggerated deep reflexes, fibrillary tremors, speech defects, muscular weakness, incoördination and spasticity being, as in most cases of paresis, typically present. One of the few examples outlined illustrates the tabetic form of pellagrous pseudo-paresis, with atrophy, muscular incoördination, pains in legs, abolished knee jerks and sensory deterioration. In all of the cases, the essential mental state is, as in paresis, a dementia. When we come to the accompanying emotional disorders, the resemblance between the true general paresis of syphilitic etiology and the pseudo-paresis of pellagra is less noticeable.

The pellagrous paretic is introspective, neurasthenic and despondent, lacking the sense of well being, emotional exaltation and grandiose delusional phenomena of the common form of true paretic dementia. The resemblances, however, between syphilitic and pellagrous paresis are sufficiently close to offer at times a real problem in diagnosis, with likelihood of error in event the possibility of a pellagrous etiology if these cases be not kept in mind.

Turning from these crude clinical data to a consideration of what pellagra is, what its cause and what its future, we are at once driven to acknowledge that we know nothing whatever.

The disease has been common in Europe for a hundred years, and carefully studied for twenty-five or more, without definite result.

The disease is as yet a new problem with us in America—five years old only. Effort thus far has been chiefly directed toward the problems of its diagnosis, distribution, frequency and toward giving individual relief to those suffering from it.

Its etiology is unknown, its pathological anatomy not characteristic, its true nature in doubt.

What we do know is that it prevails to considerable extent over the Southern half of the United States, that it is often unrecognized, that no specific treatment is possible, that its prognosis is, in fully developed cases, unfavorable, that it is a toxemia, widely acting, and as a part of its action, producing widespread degeneration in the nerve cells and cell processes, with a multiplicity of nervous symptoms, again not characteristic.

The diagnosis is made from the combination of the neuro-degenerative phenomena with presence of or history of erythema on exposed surfaces of the skin, and of gastro-intestinal disorders.

I offer these observations to direct attention to the disease, and particularly to the one phase—the paretic phenomena—which occur to me as likely to cause confusion when attention is not fixed upon the possibility of atypic paresis being of pellagrous etiology.

While at present we know little of the disease, beyond its clinical picture, I am optimistic enough to believe that before the passage of another 100 years the hidden mysteries of pellagra will have been solved by the members of the American Neurological Association, aided possibly by the bacteriologists and physiological chemists, which we are told, our council is going to soon admit to membership.

ON RACE HYGIENE STUDY AND ITS IMPORTANCE TO MODERN CULTURE

By Dr. H. Lundborg

UPSALA, SWEDEN[1]

In recent years I have occupied myself with a detailed family biological investigation of a group of peasants of southern Sweden, among whom a considerable number of nervous and mental diseases had occurred.[2]

The majority of these mental diseases was dementia præcox. In addition to this a morbid familial disease showed itself in not less than 17 cases and which is not known in other parts of Sweden, namely myoclonus epilepsy [Myoclonie-Epilepsie, s. Unterricht's family myoclonie].

I have already called attention to the disease in several articles and in 1903 published a monograph on Progressive Myoclonus Epilepsy.

Furthermore, in one branch of this generation one meets with a large number of cases of paralysis agitans. Seven of these patients were examined by physicians, of which I observed five; two of these had died before I saw them. Two more patients, now dead, were reported to have had a similar disease and who had never consulted a physician on account of their illness; yet several people in the same village were of the opinion that they had suffered from the same disease, although it could not have progressed so far before death set in. It is to be noted that direct heredity was present twice in this generation. In one case it related to father and son and in the other to mother and daughter.

I hardly believe previous to this investigation that so many cases of this not very common disease have been observed in one

[1] Translated by Smith Ely Jelliffe, M.D.

[2] These investigations are now nearly completed. The work, whose title is Medico-biological Family Investigations, contains an analysis of 2,232 members of peasant families of Sweden. It is now in process of publication by G. Fischer, of Jena, and will appear in the fall of 1912. It contains complete ascendant and descendant charts as well as individual biographies, photographs, tables, etc. The price will be about $15.

and the same family group. Further I wish to add that frequent intermarriage of relations had taken place, which is possibly the cause of many of these cases.

I shall now discuss some questions bearing on the future of this problem.[3]

I have now arrived at certain conclusions in the work before me. I am convinced, however, that much more and better results could have been accomplished if greater financial aid which would have enabled me to obtain competent assistants had been available.

I commenced these investigations empty handed and did not know at that time whether I should ever be able to finish them. Nevertheless I have continued my work, and little by little found encouragement and assistance which enabled me to pursue my investigation for the past four or five years without too great a sacrifice of time. I am under great obligations to my fellow-countrymen for assistance in many ways.

Meanwhile, during the course of this work a series of new and important problems appeared, both hereditary, biological, and race hygienic, the explanation of which required a much more extensive material than I or any other investigator hitherto had been able to bring together. Since many of these questions are of the greatest significance to the state and the people, it has become more and more evident to me that it is one of the most important tasks for all civilized communities to collect on an extensive scale useful medico-biological data, which once carefully analyzed can throw a clear light upon the history and developmental possibilities of generation and tribes.

For instance we take it as a matter of course that geographers and natural scientists should equip extensive expeditions in order to collect abundant and necessary material for their research. This should also be done by those working in heredity, although they do not need to travel around the world but are able to carry on their researches in their own country, each in his own individual home.

However it is not the will that is lacking to aid this work in many of the investigators of modern time, but the means to carry them out. In my opinion, therefore, it is one of the most inevitable duties of all civilized lands to appropriate means for

[3] They correspond to the final chapter of my work already published.

these purposes as soon as the importance of this work is more and more understood. Noted biologists and physicains have already agreed upon this course.

The question now arises, how shall this work be done? First of all it seems to me necessary that there should be in each country one or more central institutions for research work, whose directors should be competent physicians with a thorough knowledge of genealogy and biology. And those who have to carry out the investigations should be aided not only by statisticians but also by medical assistants. A small staff is needed at first but later, according to the necessity, the number may be increased. Furthermore these institutions should remain under state control and protection in every individual country and also in connection with the magistry and the social hygienic endeavors. It should be their task to collect useful data, digest it critically, and also to supply the government with the necessary explanations and guidance for social legislative purposes. I like to emphasize the fact that such an institution should not be a simple bureau but should be devoted solely to research.[4]

[4] Recently information was given in the German press that one was on the point of establishing a research institute in a similar manner for humanistic branches in connection with the University of Leipzig.

From the Frankfurter Zeitung of May, 1912, I gather the following:

RESEARCH INSTITUTIONS FOR MENTAL SCIENCE

Following the suggestions of Professor Lamprecht, Leipzig has made arrangements to have research institutions in connection with the university. The preparatory work of this undertaking has progressed so far that the ministerial consent only is needed in order to take effect.

Already $250,000 have been collected; thereby we reckon that we may be able to give to each individual research institution a yearly installment of not less than $30,000, inclusive of the allowance made by the state and city.

The Research Institute for Mental Science represents a supplement to the Kaiser Wilhelm Society for the Advancement of Science and which was established two years ago, since this devotes itself only to natural science. At the establishment of the Kaiser Wilhelm Society the general opinion was that Althoff had been the original author of the idea of the society. Such is not the case, although he might have given indirectly occasion for the establishment of this society. Professor Lamprecht discussed with Althoff his ideas about having a research institute for all the sciences. Eight years later, at the hundredth anniversary of the University of Berlin the Kaiser Wilhelm Society was established, which only interests itself in natural science, at least for the present. Thereupon Professor Lamprecht, at this time rector of the University of Leipzig, laid his plans and ideas before the society to establish a research institution for mental science. According to the latest dispositions research institutions are planned for the following branches: History, ethnology, history of reli-

I now come to the question in what manner the material is to be gathered. This may and must be done in different ways. I have thought of the following:

The first and simplest method is to examine the present population, not only the sick, but everybody without exception, children as well as adults; that is to give the description of persons pure and simple from a pathological and physiological standpoint, in other words, a biological demography. This would represent, so to speak, a medico-biological cross section of the population.

Provided the investigations are carried on in a careful manner, following a uniform method, it is evident that one could obtain points of comparison as to quality between the poulations of different districts. Provided further that similar investigations are repeated in such districts at proper intervals it would be possible to follow the changes, for better or for worse, which the population of a district has experienced during such time; to know all of which would be of the greatest importance. In due time, the greater portion of the population may be examined in this manner.

Another method of investigation which also should not be neglected is to record all of the more important defects that may be found in a somewhat larger district, like a county. It is not necessary to examine every individual for this purpose, but only the more or less defective ones, such as the idiots and insane people of different kinds, epileptics, deaf mutes, and criminals of different categories. To this could be added with advantage cer-

gion, experimental psychology, political economy and art. These institutions are to be connected with the University of Leipzig. In these measures taken one sees a certain guarantee to maintain the necessary and permanent correlation between the research institution and university. By uniting those institutions the possibility of conflict is avoided. The new academy of research will not only aid science, as such, by financial support, but at the same time is striving also to enlarge academic work, since it will offer to especially gifted students an opportunity to prosecute deeper scientific research outside the limits of their professional work. The scholars in these new institutions will be released from all teaching activities.

Wundt is actively associated with Lamprecht in this new foundation. Wundt will be in charge of the Institute for Experimental Psychology which will be greatly expanded just as the Institute for Culture and Universal History, with Lamprecht as manager. Lamprecht himself was more or less surprised to see the rapid development of his plans, the hearty acceptance they received from the Cultus-ministerium of Saxony.

This project gives Leipzig a new advantage over the other German universities. Through the means now available, academic research institutions can be erected which hitherto existed in no university.

tain data taken from the official statistics of the entire population. Anthropological investigations should be undertaken inside of such districts [counties], the object being to prepare social and pathological monographs of the population of the counties, according to counties, thus preparing a biological race map, if such an expression may be used.[5]

Carefully collected material of this kind would enable us to determine indices or measurements indicating the social biological conditions, thus affording a measure of the defectiveness of the population. The norms which have been thus obtained for several districts may of course be compared one with another.

A third method of collecting material is the biological family and tribe investigation, using ancestors' tables as well as combined tables like those of Crzellitzer's Sippschaftstafeln and Rudin's Verwandtschaftstafeln, from generation to generation, wherein one investigator begins where the other left off. If such studies are carried out on a larger scale one gradually obtains medico-biological longitudinal sections of the population. Undoubtedly through it many now dark points in the principles of heredity and of degeneration will be explained. Different kinds of dispositions may also be analyzed and the whole doctrine of heredity will stand on firmer ground; a goal well worth aiming for in human investigation.

For different reasons Sweden is a country suited in a larger degree than most other countries for such family-biological investigations.

1. For many years the Swedish church records have contained the necessary data for this purpose, and are more complete than are those of other parts of the world. For this reason they permit of the investigations of heredity according to modern principles. In addition it may be added that official statistics in Sweden already have a long ancestry.

2. Everybody in Sweden speaks the same language, with the exception of a few Finns and Laplanders; all have the same religion and the people are a comparatively pure race.

3. General culture is of a high order, which renders easier investigations of so sensitive a kind as those covering heredity.

[5] As I have recently learned through Dr. Hagelstamm, of Helsingfors, it is the intention in Finland to follow this method, where already $25,000 has been contributed for the purpose of studying the Swede in Finland.

4. The interest in biology and in biological study is very great all over the land.

5. Sweden has but a few large cities and the density of the population as a rule is not particularly great. Large cities, as is well known, exercise a great attraction upon the farming population around them, which renders investigations of families in such districts more difficult. The same conditions prevail in a densely populated province. In less densely populated districts the career and entire personality of single individuals becomes more easily known to the neighbors and officials, which in a degree benefits the investigation of families.

6. Syphilis has spread little among the Swedish farming population in general. This simplifies the matter of drawing conclusions wherever matters of heredity are concerned.

The more such material is collected the firmer the foundation laid down for the new science which in England has received the name of National Eugenics from Galton and Pearson, and which in Germany has been called by Plötz, Social or Race Hygiene.

The English and American people have for a long time understood the importance of such investigations and by the assistance of men of fortune (Galton, Carnegie and others) have founded institutions for the investigation of heredity.

In Germany also of late years such studies have taken a firmer form. It has begun to be realized that such investigations cannot go far without the investigators standing together, working in cooperation from some central institute of investigation.[6]

Schüle more than any other has seen this for a long time. He has had successors who cannot be silenced any longer. Among them may be mentioned Sommer in Giessen, Weinberg in Stuttgart, Kraepelin, Gruber, Alzheimer, Rudin in Munich, Roemer in Illenau, all of them prominent investigators. Rudin, Kraepelin's first assistant, who is a most energetic family investigator, has recently expressed this in a meritorious manner. I will conclude this work with a few of his words, with which I agree perfectly.

"Family investigation must become a systematic and methodical life work and a profession; it must not become amateurish

[6] A congress for family research, heredity and degeneration was held recently in April, 1912, in Giessen under the direction of Professor Sommer, who prepared a resolution which unanimously advocated the erection of such an institution in Germany.

nor playing at shield and name genealogy, nor must it become a mere blind appendage of psychiatry. It must always remain conscious of its relationship to experimental biology. It must stretch backwards and into collateral branches. But just this much, nay, especially so, it must be directed into the future so that just those medical data are obtained for posterity, which we miss in old families of early origin. Subsequent generations should therefore faithfully continue this tradition we leave them."

It is a work considered in its highest value which only the future may complete.

Such conclusions, however, must be allowed to mature and we should be careful therefore not to announce premature ideas which by reason of the situation itself must be reserved for the future. Such maturity may be furthered substantially, if suitable material collected by contemporaneous generations be brought together at one or several centrals in order to receive the necessary arranging and classifying and working over, which it may permit.

For the present therefore I believe that scientific centrals with special branches should be formed in several greater or smaller countries for family research. These branches should be in continuous and direct touch with the sick and their healthy relatives and also with the authorities of the country. Thus an investigator may have at his disposal, above all, the large and easily accessible original material of the central institution and thereby be saved from reaching merely theoretical conclusions.

Authorities should be asked to coöperate in systematic and continuous manner after they have been made aware of the far reaching importance of the investigation.

In view of the enormous growth of the financial burdens due to the increasing obligations of taking care of the defective and sick ones of all kinds, a burden which the state must bear in spite of the incredible progress made by bacteriology, etc., the carrying out of these suggestions almost becomes a necessity or a state-preserving duty.

The results that may be obtained from investigations as just mentioned should uncover governable causes of various heredities, and thereby of co-acting causes of diseases and early death and should teach us to avoid them according to the rule "prevention is better than cure." The merciless weeding out

processes of nature associated with innumerable pains both of the body and the soul, would in this way be mitigated, or reduced to a minimum.

This is the reward that may be reaped by our own efforts and by those of our successors. The most important features of the program to be followed are given. It is now only a question of will and of money if we would apply ourselves to its solution.

ACUTE INFECTIOUS TRANSVERSE MYELITIS DUE TO THE VIRUS OF POLIOMYELITIS; COMPLETE RECOVERY[1]

By B. Sachs, M.D.

Recent epidemics of infantile spinal paralysis have brought to light many atypical forms of the disease. Few would have suspected that a dorsal transverse myelitis might be one of these. Aside from the positive proof obtained of the relationship, and from the interest inherent in a case of complete recovery, this record is of especial note as showing the change that has come about in our view from the purely anatomical, to the etiological, designation of disease. From the anatomical point of view, poliomyelitis[2] would be a misnomer as applied to this especial case, but it will be best to retain the term until a name shall have been found for the virus itself.

The salient points of the history are as follows:

Rose L., 18 years of age, was admitted to my service at the Mount Sinai Hospital December 12, 1911. Trauma as well as preceding cardiac or infectious trouble could be excluded. About one week prior to admission she felt slightly ill and complained of pains in the back and in the arms. On the morning of December 9 she left her house to go to work. After walking ten blocks (which took one hour) her legs gave away and she fell, striking her buttocks against the ground. She was helped up, being unable to raise herself, but walked home unassisted; she noticed that she was dragging the right leg and had a distinct prickling sensation in the right foot. That day she walked about in the house, though with great difficulty; there was no trouble in voiding urine. The following day (December 10) she was unable to move the right leg and the prickling sensation was noted in the left foot as well as in the right. On this day she noticed some trouble in voiding, and the next morning (December 11) she was unable to move either lower extremity. By this time sensation was lost in both lower extremities. There was no pain at any

[1] From the Neurological Department of Mount Sinai Hospital.
[2] The term Heine-Medin disease is altogether unsatisfactory.

time, but a sensation of "pins and needles" when she was turned over in bed.

At the time of admission (December 12) the records state that her "general condition is fair; she is anemic, and her legs are in a condition of complete flaccid paralysis with almost complete anesthesia extending from the toes to the tip of the xiphoid process and to the angle of the scapula. Above this there is a zone of hyperesthesia extending anteriorly to the second rib and posteriorly to the third dorsal spine." All the deep reflexes were increased; the knee-jerks were markedly exaggerated, there was a bilateral exhaustible ankle-clonus, a bilateral Babinski; the Oppenheim and Mendel reflexes were present. There were no trophic disturbances anywhere, but the extremities were cold. There was absolute retention of urine. In addition, we noted an enlarged thyroid isthmus and enlargement of both lobes, with slight exophthalmos and von Graefe symptom (no tachycardia); slight rigidity of the neck with presternal pain on attempting to flex the head. The upper extremities were entirely normal and there was no other abnormal condition of any significance. The vertebræ were not sensitive to percussion and we ruled out spondylitis, an opinion in which Dr. Nathan, the orthopedic surgeon, concurred.

During the first six days, the condition remained practically unchanged. The blood counts showed: *December 15:* W.B.C. 13,100, polynuclears 68 per cent., lymphocytes 32 per cent. *December 16:* W.B.C. 13,800, polynuclears 47 per cent., lymphocytes 51 per cent., basophiles 1 per cent., eosinophiles 1 per cent. The von Pirquet test was negative. We were prepared to have on our hands a severe form of transverse myelitis. It was a great satisfaction, so early as the sixth day, to notice a slight return of power, and from this time on we became suspicious of the unusual character of this myelitis and of its relation to poliomyelitis (there was no distinct epidemic of the disease in New York at this time, but cases were not altogether infrequent).

From the time of admission to the hospital the temperature did not rise above 99°. To exclude all other possible forms of transverse myelitis, the Wassermann reaction was made with the blood and the cerebrospinal fluid taken on December 14. The reaction was negative in both (Dr. Kaliski). The cerebrospinal

fluid showed a marked increase in the number of leucocytes 57 per cmm., polynuclears 26 per cent., lymphocytes 72 per cent., eosinophiles 2 per cent. The fluid was sterile, it contained some albumin and there was a trace of sugar (Dr. Ottenberg).

The secretions from the throat and nose showed no influenza bacilli and the x-ray examination of the spine (Dr. Jaches) was also entirely negative.

The further observation of the patient revealed a marked tendency toward rapid recovery.

On December 18 there was noted evident increase of power in both legs, especially the left; patient could flex and extend toes of left foot. There was appreciation of touch with accurate localization of sensation over both legs. Tenderness to touch in region of the first and third dorsal spines. Deep reflexes remained unchanged. Improvement continued; on December 29 it was recorded that patient can move toes of both feet; can flex thighs upon the abdomen, exerting considerable power; the left lower extremity now stronger than the right. On January 1 patient was taken out of bed and put in a rolling chair: She recovered so rapidly from this day on that by January 21 we were able to record that she has good power in the lower extremities and walks very well. The knee-jerks are still exaggerated and there is an exhaustible clonus. Sensation has become practically normal; there is some slight hypalgesia along the anterior surface of the thighs and the outer surfaces of the legs.

On January 31 the patient was discharged. The final note made was that there was a slight weakness of the right lower extremity, and some slight hypalgesia from Poupart's ligament downward, more marked on right than on left side. Temperature and tactile sensation practically normal. April 15, 1912, the patient returned for a final examination; she walked splendidly and of her serious illness there were no signs present, except the lively knee-jerks and a right exhaustible ankle clonus. She has gone back to work feeling well and strong.

It remained for us to obtain positive proof of the nature of this infectious transverse myelitis. On January 21, ten days before the patient was discharged and seven weeks after the onset of the disease, blood was taken from the patient's arm and sent in sterile condition to the Rockefeller Institute. Dr. Clark, to

whose willing coöperation we are greatly indebted, reported a few weeks later that the neutralization test[3] showed that the patient had suffered from a form of poliomyelitis.

This proof is both complete and satisfactory. With the exception of a case reported by Anderson and Goldberger[4] the poliomyelitic character of an acute transverse myelitis has not been established to my knowledge in any other case.[5]

The case was not altogether unique in our experience. Shortly after Rose L. was discharged from the service, a young man of 20 was admitted whose illness and mode of recovery bore the most striking resemblance to the case reported in detail, but as the neutralization test was not convincing, I do not feel warranted in adding it to this category of cases. Some years ago I saw in consultation a young lady who developed a complete transverse myelitis, evidently of infectious origin, beginning very suddenly and most intensely and yet ending in complete recovery after a few weeks. This patient was under observation before the days in which the peculiarities of the virus of poliomyelitis became known, but I have a strong suspicion that her infection was of this order. I refer to these other patients for the purpose of raising the question whether or not these atypical forms of poliomyelitis are extremely rare.

The rapid and complete recovery of this transverse myelitis deserves a final word of comment. If we except the cases due to moderate trauma, to specific disease, and those due to the influenza infection, recovery from a transverse myelitis without paralysis or rigidity is rare enough. It would have been in order to refer to the apparent lesser intensity of the poliomyelitis infection when it involves the entire cross section of the cord, were it not for the fact that in recent epidemics of the disease

[3] The salient points of the neutralization test are the following: The serum is mixed with a fatal dose of a known virus, incubated from one to two hours at 37° C., and then allowed to stand for twenty-four hours on ice. The injections were made intracerebrally into monkeys (Macacus rhesus). It has been found that in certain instances the serum of normal individuals contains antibodies which inactivate the virus, so that the test cannot be regarded as invariably specific.

[4] *Jour. Amer. Med. Assn.*, 1911, LVI, 663–667; *Proc. Soc. Exper. Biol. and Med., N. Y.*, 1910–11, VIII, 54–56.

[5] Dr. Foster Kennedy presented a similar case before the N. Y. Neurological Society last winter. The neutralization test was not made by him.

numerous cases of complete recovery occurred in which the symptoms had pointed to the (typical) involvement of the anterior gray horns only. The recovery may be attributed, therefore, to the lesser intensity of the infection and not to the especial area of the cord involved.

THE STATE PSYCHOPATHIC HOSPITAL IN BOSTON[1]

By Walter Channing, M.D., *Chairman*

TRUSTEE BOSTON STATE HOSPITAL

It is rather interesting, when an enterprise has been brought to a successful conclusion, to look back and see what the different influences have been to bring it about. In the case of the new psychopathic hospital, I remember as the first discussion which perhaps had something to do with it, a meeting of the Suffolk District Medical Society in Boston about 1897. In 1896, I had established a mental out-patient clinic at the Boston Dispensary, and was finding it impossible to secure any accommodations in a hospital for patients who were not insane, but just on the border-line. At the same time, also, the physicians who examined the insane for the city of Boston were not satisfied with the existing arrangement of placing patients who came under observation, or protection of the police, in the City Tombs, or House of Detention. Nothing came of the discussion except the interest aroused. In December, 1904, Dr. Stanley Abbot read a paper at a meeting of the Society of Psychiatry and Neurology entitled "Wanted. A Reception-Observation Hospital in Boston." In the discussion that followed, Dr. George F. Jelly, of blessed memory, thought a committee should be appointed that would carry out the suggestions of the paper, and such a committee of five was appointed, composed of Doctors Copp, Abbot, Cowles, Channing and Baldwin. The meetings of this committee were held at different times, and in December, 1907, it reported: "(1) That it is the sense of the committee that a reception-observation hospital should be established in the City of Boston at a location convenient for the police and medical schools, as a branch of the Boston Insane Hospital, provided that the Boston Insane Hospital shall be brought into possession of the state and developed as a state hospital for the insane of the metropolitan district. (2) It is recommended to the Society that a committee of three, with power to add to their number, be appointed by the

[1] Read at the thirty-eighth annual meeting of the American Neurological Association, June 1, 1912.

president of the Society to promote the bringing of the Boston Insane Hospital into possession of the state and the repeal of the exemption of Boston from the operation of the State Care Act." These recommendations were adopted by the Society and a committee composed of Doctors Stedman, Tuttle and Channing was appointed to carry the suggestions made into effect. In January, 1909, Drs. Taylor, Lane, Stedman, Tuttle and Paul were appointed to make known to the governor the opinion of the Society in regard to building a psychiatric hospital and sanitorium for voluntary patients.

In 1900, the State Care Act was passed, which, however, exempted the city of Boston from its provisions. In 1908, after urgent appeals by the State Board of Insanity and the members of the Society of Psychiatry and Neurology, the legislature voted to include Boston in the Act referred to. It was bought at an expense of $1,000,000, and in 1908, put into the hands of a board of trustees as a state institution.

During the time the agitation for a psychiatric hospital by the Society of Psychiatry and Neurology and the Board of Insanity had been under way, the great injury to persons arrested in the city of Boston and confined in some kind of a prison cell over night, or over Sunday, was becoming more and more felt by many of those interested in the insane, and hearings on the subject were held by the mayor.

It will be seen then that these various influences were at work to bring about the desired end: first of all, of course, the great progress being made in the care and treatment of the insane; secondly, state care, which made Boston a part of the state system; thirdly, the crying need of reform in the matter of looking after persons arrested with presumable mental trouble in Boston, and fourthly, the more or less continuous agitation of the Boston Society of Psychiatry and Neurology.

It is certain, however, that much less would have been accomplished in this state, if there had not been a Board of Insanity to coördinate and focus efforts for improvement both within and without the hospitals. Knowing all the facts from the inside, and being broadminded and progressive, that Board, when first organized, started out on a plan of development which has been maintained ever since. In the last report of the Board, this policy is stated in a very few words as: (1) State care and sup-

port of all dependents under supervision of the Board; (2) division of the state into institutional districts accessible to the friends of the patients; (3) division of each institutional district to include a mental sanitarium; psychopathic hospital; colony and infirmary.

In the year 1908, the Board of Insanity was directed by the legislature to investigate and report what it considered the best method of providing for the insane of Boston and its vicinity, and it made a careful and detailed report which is worth consulting by those interested in a broad scheme of development of hospitals for the insane. But what we are especially concerned with here is the argument for the psychopathic hospital, which had much to do with the final decision of the legislature to appropriate money to build one. It was the opinion of the Board that those state hospitals caring for all classes of the insane should have attached to them a psychopathic hospital, stating that it would be expected that about 10 per cent. of their patients would be of the curable class and fit subjects for treatment. It thought that such a hospital in a large city should be located near general hospitals and medical schools in order that diseases of the brain might be associated with affections of other organs; that it also should have facilities for investigation and study of clinical and pathological material; that there should be a medical director of the highest rank to supervise the medical and scientific work; and that physicians, scientists, and students of the first order should be attracted to it as a research center, trained for future observation in mental diseases, and for physicians in the service of institutions. They would then be able to go into practice in the community, able to recognize and interpret the earlier indications of derangement of the mind and perhaps forestall its development into confirmed insanity. There is, the Board said, imperative need of public provision for the treatment of incipient mental disease. The present lack prevents preventive treatment and lessens the chances of cure. There should also be an outpatient service similar to that of a general hospital. There should be coöperation with local charitable agencies in ascertaining home conditions and endeavors to change them if unsuitable.

These and many other arguments most ably urged by Dr. Owen Copp, executive officer of the Board of Insanity (whose genius for constructive work is probably well known to all of

you) and the many physicians and laymen interested, finally led, in 1909, to an appropriation by the legislature of $600,000 to build a hospital for the first care and observation of cases of acute mental disease, to be under the management of the trustees of the Boston State Hospital.

The responsibility placed on this board was accepted by its members, and under the guidance of Dr. Copp, who practically engineered the whole matter, suitable land, comprising about 80,000 feet, was selected for a site hardly more than a stone's throw from the large Peter Bent Brigham hospital, now in the course of erection, and only slightly further from the Harvard Medical School, and easily accessible to the other medical schools in Boston. The credit for planning the building must be given almost wholly to Dr. Copp, although he was ably assisted by Messrs. Kendall, Taylor & Co., the architects, who, under Dr. Copp's direction, made the designs. There were no precedents for just the kind of buildings we wanted, although already plans for the new Phipps Psychiatric Clinic had been prepared and studied by Dr. Copp. He had to do the best he could, relying on his long experience as a builder and supervisor of institutions.

It will be noticed that this hospital is for the first care and observation of cases of acute mental disease. As a public institution, it has a broad field to cover, for it will admit all cases coming under the observation or the protection of the police, as the Boston State Hospital has been doing now for about two years under the so-called Temporary Care Act. Secondly, other cases will be admitted for observation, under other laws, to determine their mental condition as to commitment. Thirdly, it will receive, under a recent act, presumably insane persons without a physician's certificate, for observation for seven days, and fourthly, voluntary patients who come wholly of their own initiative. Some patients, who are evidently curable in a short time, will be retained, but the probabilities are that most of those admitted, after a few days, will be transferred to some other hospital. It was originally thought that as many as 1,500 patients might be received in a year. With the capacity of only one hundred, it will be seen that the discharge rate will have to be also large.

The hospital is of four stories, of brick construction with terra cotta trimmings. Seen from behind, it is E-shaped, there

being a wing at each end of the main building, and what is called a "pavilion" running back from the center. Patients will be admitted from a walled court in the rear, at one side of the pavilion. The office of the admitting physician is close to this entrance, and connecting with it are two small reception wards for seven patients of each sex. There is a small operating plant on this floor. On the first floor of the main building are the various offices and quarters of the medical officers and some of the employees; an ample out-patient and social service department with examination and treatment rooms, and rooms especially set aside for children. The second and third floors of the pavilion are duplicates; each containing a ward for 24 patients, one being for women and one for men. In each ward there are six continuous baths; physicians' examination and office rooms; a clinical laboratory; treatment room and diet kitchen. There are several single rooms at the rear of these two floors, and small dormitories of four and six beds. The second floor of the main building contains the laboratories; a large library and quarters for the medical officers, and for officials of the nursing staff. The third floor of the main building is largely given over to nurses, and has a good sized assembly room. This floor can easily be converted into two wards for patients, if it is desirable. This, however, is not contemplated at present; in fact, it would not be possible until a nurses' home has been built. The fourth floor of the main building is for patients, being divided into two wards, 21 of each sex in each ward. There are the necessary physicians' and head nurses' offices; clinical laboratories and examination rooms on this floor, and at the end of each wing a solarium. On the roof of the pavilion is a roof-garden and large solarium for the patients' use, and a lecture room and diet kitchen for nurses, presumably to be used for their instruction as part of the training-school work. There is an ample basement reached by an elevator, with hydro-therapy plants; rooms for autopsies; medical gymnastics; electric appliances; X-ray apparatus; photography, and a dispensary. The kitchen, refrigerator, supply rooms, dining rooms, and so on, are also on this floor.

The effort has been made by all those responsible for the construction of the hospital to make it as much like a general hospital as possible, and in its organization the same plan will be followed, though there will not be a visiting staff. The director

is, of course, a medical man, and he will have his own laboratory adjoining the library. On the other side of the library will be the chief laboratory assistant, and clustered around in convenient locations are the other laboratories already referred to. There will be a chief medical executive; such assistant physicians as may be necessary; a pathologist; bacteriologist; psychologist; technician; and other laboratory assistants. In the beginning, of course, the work will depend on existing conditions. These matters will be explained to you, better than I can do it, by the director himself, Dr. E. E. Southard, professor of neuropathology, Harvard Medical School.

The out-patient department may have a paid physician at the head of it. What plan will be worked out depends, of course, upon the number of patients. It may be that in this department it will be desirable to have a staff of physicians from the outside, and of course we may say in passing, there will be a consulting board to the hospital whose services, no doubt, will be frequently taken advantage of. It is expected that the social service work will be of great importance and this will dove-tail in with that in the out-patient department as well as in the hospital. It will be our endeavor to arouse the interest in the out-patient department of as many physicians and laymen as is possible, for we believe that our work is going to be, to a certain extent, educational, and the more mentally sick and weak people, with their friends, that we can get hold of, the better our opportunities will be for instruction.

It should have been said, in detailing the organization of the staff, that there will also be medical students as internes. It is especially hoped that, as suggested by the Board of Insanity, it will be possible to train many of the future general practitioners in the state to intelligently observe mental diseases, as the opportunities certainly will be of the first order, and there will be an able medical staff to give the instruction. Slowly, but surely, we expect to raise the standard of treatment and do something toward furthering the prevention of mental disease. We cannot expect any pyrotechnic display in this way, for it is hard to combat and correct the mistaken ideas in the way of living of a community, but the effort will be made to do all that is possible.

In the beginning, as we shall be the only institution of the kind in the state, and as the director is also a pathologist for

state insane institutions and the Board of Insanity, we shall expect to be the leaders in advanced methods of treatment and research, and we shall be glad to coöperate in any way that is desirable to help any of the other hospitals. Having facilities that will not be available elsewhere, we shall hope to serve as a model when a similar hospital may be erected in any other part of the state. The general administration of the hospital will be under the direction of the present superintendent of the Boston State Hospital, leaving the medical director entirely free for his medical and scientific duties, but though administered in this way, the hospital is, to all intents and purposes, an independent unit, and quite unhampered by the fact that it is, strictly speaking, a department of the Boston State Hospital. To make it subsidiary, would impair its influence, and it is in every way desirable that it should stand firmly on its own feet.

It is not expected to run the psychopathic hospital economically, as is the case with state insane hospitals. It has got to be, in every sense of the word, on a par with a general city hospital, and that means many physicians, many nurses, expensive treatment, expensive food. To be a success, no expense should be spared. The justification for this is the fact that if the hospital accomplishes all that it should, there will be a considerable increase in the recovery rate, and eventually much mental disease prevented. The state is sure to see the force of this argument when it realizes the fact that each incurable insane person means, on the average, an expense of probably $2,000. It may be said, however, to the credit of Massachusetts, that in establishing this psychopathic hospital, motives of humanity and not economy have influenced her.

Note.—Since this paper was presented to the Association, the hospital has been in operation for upwards of three months. Up to October 1, 1912, 301 patients had been received. The out-patient department, which has been a success from the start, has several physicians who are paid for part-time work and one who is not paid; a paid non-medical secretary and a social worker who is making an investigation into eugenics and is not paid by the hospital.

Translations

DREAMS AND MYTHS. A STUDY IN RACE PSYCHOLOGY

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(*Continued from p. 697*)

X

Wish-Fulfillment in the Prometheus Saga

After having convinced ourselves that the dream censor and the dream work find their complete analogy in myths, let us turn back to the question of wish-fulfilling in the Prometheus saga. It is of importance to discover what is hidden behind the symbolic clothing. It will appear that on this track of our inquiry we can not do without the direction of Freud's procedure in the interpretation of dreams.

The Greeks themselves made an experiment in this direction. The content of the saga had become for them unintelligible; the name of the hero easily permitted a little variation so that one could understand something by it. So Pramantha became "Forethought." Such a semi-divine figure one could—if the expression be permissible—use very well. Its existence sets forth an actual wish of mankind through all time: a wish for a care-taking being. In the explanation of the name "Forethought" there lies, without doubt, the expression of a wish. We know, however, that this meaning of the myth is secondary, and that the symbolism of the Prometheus saga does not at all fit it. We are

reminded of quite analogous relations in dream psychology. Not seldom, quite on the surface of a dream, a wish is distinguishable at first glance. The dreamer, in such cases, is ready to acknowledge this wish as a fact. It is always a wholly unsophisticated wish! One asks himself then, what object, in such a case, the dream work accomplishes, when the wish, for the veiling of which the dream work should serve, lies open as day. If we now apply an exact analysis to the dream, it will be noted, that behind the actual wish a repressed wish is hidden, which shows an analogy with it. The actual wish constructs, in a manner, the outer layer of the dream; under this lies a repressed wish. With this, however, the work of interpretation is not concluded. In many cases there is certainly a third layer. This deepest layer in the dream (as in the psychoses) is always constructed from the reminiscences of infantile wishes.

Such a stratification one can establish in the Prometheus saga. We know from Kuhn's investigations that the oldest layer of the myth represents an identification of man with fire, the origin of man with the origin of fire. The second layer corresponds to a later view into which entered personal gods. In this layer of the myth the fire-god is at the same time man-god, by whom the man is begotten. In the third, the latest layer Pramantha is no longer the procreator but the creator of man and his "forethought."

The wish phantasy contained in the last layer, which is quite clear, we have already considered. After the analogy of dreams we may expect that the two older layers also embody a wish. The wish of the second layer we know already. Man derives his origin from a divine being and consequently is himself divine. He identifies himself with Pramantha. We can show that a similar tendency expresses itself therein as in the childhood phantasies of the individual, which we derived from the existence of a grandiose complex. To be more precise, the wish of the second layer would be: We would like to originate from a divine being and be ourselves divine; each of us is a Pramantha. I show from this that this phantasy has an evident sexual component. If the sexual, in the second layer, constructs a relatively subordinate component, we however find in the deepest layer a clearly sexual content, a plain wish-fulfilling in the sexual sphere. The second layer is differentiated from the oldest by a far advanced sexual repression.

The symbolism of the deepest layer is evidently sexual; it gives expression to a grandiose complex. Man identifies his generative power with the ability of the borer to produce fire in the wooden disc, with the effects of the borer of heaven—the lightning. The oldest form of the Prometheus saga is an apotheosis of the human power of generation.

We have taken the pains to show that the sexuality forms the most inner nucleus of the being of man. It is an old and widely diffused error that in respect to sex the child is wholly indifferent. I am not thinking here, naturally of cases of abnormally early sexual maturity. Especially through Freud's[34] researches we are forced to conclude that there is a sexual activation already in early childhood, which surely is not consciously that to the child and which must be differentiated from the sexual activity of the mature, healthy individual. The desire is awakened very early in children to exhibit themselves, with which is bound up the curiosity in reference to the sex differences and procreation. Every child—some earlier, some later—asks: Where did I come from? What the child learns in this consideration is food for his phantasy. The interest in the sexual processes produces in the growing child a fixation of attention like nothing else. An unexpectedly received explanation has not infrequently resulted in violent emotional disturbances. So the first physiological signs of sexual maturity, which the child notices itself, not rarely calls forth anxiety and aversion.

We have already repeatedly seen pathological phantasy formations grow out of infantile phantasies. We also found characteristic analogies between these pathological products and myths. The phantasies growing out of the childhood desire to show oneself and curiosity the physician meets quite commonly, if he penetrates the psychic life of neurotic and psychopathic persons by means of the psychoanalytic process. I refer, in this consideration, especially to Freud's[35] analysis of a case of paranoid psychosis. Sexual curiosity is of extraordinary significance in the realm of the psychic phenomena of compulsion; this is especially so for the compulsion to constantly inquire into the reasons for things. Patients with this peculiar affection must busy themselves, against their will with transcendental questions such as the origin of God and of the world or they must rack their brains

[34] "Drei Abhandlungen zur Sexualtheorie."
[35] "Vgl. Kleine Schriften zur Neurosenlehre," Seite 124.

over the reason for this or that thing in the world being as it is and not some other way. A case of my own observation, which I will communicate here, will illustrate what significance the infantile exhibitionistic tendency in neurotically afflicted persons has for the explanation of this condition.

The patient differentiates himself two kinds of compulsive appearances, first the compulsion to pray, second the compulsion to consider every object with the greatest care and then to speculate on its origin, restoration, composition, etc. He stated that he had been subjected to this compulsion since his childhood. Often for a shorter or longer time it remitted but always recurred. Analysis disclosed that he had, upon numerous occasions, when he was a boy, tried to expose persons with whom he had shared the bedroom or the bed. His whole interest concentrated itself on the sight of the genitals and the buttocks, on the origin of children as well as the preceding processes. On account of the violent attempts by which he sought to satisfy this practically pathological curiosity, he passionately reproached himself and began to pray to God that he would allow him to become a good man. The prayer contained the character of the compulsions; he wrote bits of paper full of litanies and read them as often as he could. He had great anxiety lest he omit a word. With the prayer developed at the same time the compulsive consideration of objects. It has come about, therefore, that the patient has set about the study of all possible indifferent objects in place of the consideration, considered as sinful, of certain bodily parts. Therefore he is especially interested in the back side of objects and the process of their origin. Through reflection on the origin of indifferent objects he seeks to provide a counter-balance against the reflection on the origin of man. The affect of anxiety becomes, as always happens in such cases, "transposed"[36] to indifferent ideas. What every growing child in a high degree, and this boy in an abnormal degree, busies themselves with, is the same theme that in mythology is indicated by anthropogenesis.

The creation of man, the origin of a new living being, offers so many mysteries, that these processes, on that account, from the beginning on, attract the special interest of men and give a great incentive to myth formation. In an age, from which naturalistic views are still remote, procreation must appear like

[36] "Sammlung kleiner Schriften zur Neurosenlehre," especially page 118.

magic. This supposition we can give weighty support. Everywhere in mythology, in miracles, etc., the magic wand plays a great rôle. There can be no doubt (for reasons which I can not discuss in this place) that the magic wand signifies the symbolic representation of the male genitals. A quite similar symbol, the rod boring in the wooden disc, is the nucleus of the oldest form of the Prometheus saga. I have, up to this point, not yet referred to a very remarkable characteristic of the Prometheus saga: that it is a pure masculine saga. The procreating man appears in it as well in the form of a person (Pramantha) as also symbolically. The woman is only represented by the symbol of the wooden disc and in the saga is only casually mentioned. We had formerly reached the conclusion that the Prometheus saga, in its earliest form, was an apotheosis of the power of procreation. This view receives here a conclusive confirmation. The Prometheus saga, in its oldest form, had the tendency to proclaim the masculine power of procreation as a principle of all life. That is the sexual delusion of grandeur of all mankind even to the present day.

XI

Analysis of the Myth of the Origin of Nectar

The saga of the origin of fire, which we now rightly indicate as a saga of procreation, is closely bound up with the saga of the origin of the nectar of the gods. We have already referred to this but have not, up to this time, entered upon an analysis of this myth. From former experiences we may expect that two sagas which stand in close relations to one another will also agree in their tendencies. For the analysis of the nectar myth Kuhn's fundamental work serves us again as a guide. In certain places we certainly will have to travel our own path.

Nectar was named amrita in the oldest Indian sources, in the later soma, in the Zendavesta haoma. The designations nectar and ambrosia are generally known from the Greek mythology. To the nectar are ascribed various wonderful, mysterious effects: it animates, it inspires, it confers immortality. The last attribute is clearly expressed in "amrita" and in the etymologically corresponding "ambrosia"; also a similar meaning is contained in "nectar."

So far as our traditions reach back all peoples manufacture in-

toxicating drinks, the use of which calls forth the well-known deceptive feelings. Man feels himself animated, inspired, exalted; at the same time the drink gives him an increased feeling of warmth and stirs up his sexual desires. The cult of Dionysus bears always at the same time, an erotic character. Drink thus calls forth fire in man, in a double sense: Warmth and the fire of love. Man produces intoxicating drink by crushing certain kinds of plants. These appear in the myths as soma plants. Of these plants the ash (mountain ash) especially interests us. The same tree, the wood of which served for the creation of fire. A juice was pressed from its branches which was called soma.

Besides the earthly soma there is also, in the myth, a heavenly soma, and these two are identified with one another quite as we have seen was the case with the earthly and the heavenly fire. On earth soma and fire are gotten from the ash. As according to the Prometheus saga the heavenly fire is kindled in the world-ash (the cloud-tree) so likewise, the heavenly soma comes from the world-ash. It is called forth by boring in the wood of the world-ash (that is in the clouds). The earthly soma is descended from the heavenly soma of the heavenly ash. A bird, which nested in the branches of the ash, brought it to the earth. The analogy with the fire saga is here quite striking. As the heavenly fire embraces the heat of the sun and lightning, so also the heavenly soma is ambiguous; it is at the same time dew and rain and further still comes to be the drink of the gods. The cloud-tree is in certain myths exactly described. Its roots are in the sea; at its foot are springs which fall to the earth as rain. From the branches falls the dew.[37]

We have established that in the oldest stratum of the Prometheus saga the breaking out of the earthly and heavenly fires served only as symbolic representations of the process of procreation. We may with justice assume that the earthly and heavenly soma also serve as symbolic representations of a third element

[37] Another idea, found in the Indo-germanic myths, saw in the clouds a running horse from whose mane the dew ran to the earth. From this cloud-horse the bearer of the inspiring soma, grew out, in the Greek mythology, the winged-horse Pegasus. On the other hand, from the flying clouds, the pursuing Erinnyes were formed. In the same way the saga touches of wild men in the Germanic mythology. The idea that one cloud hunts another and seeks to catch it we find again in a modern painting—Heuernte von Segantini. It is very remarkable that the phantasy of an artist, whose work embodies the idea of the unity of nature, should take the same direction as the phantasy of the race in prehistoric times.

that is still quite unknown to us. Although the meaning lies near it has escaped Kuhn. We will therefore have to pass by Kuhn's analysis in order that we may supply an explanation of the third and most important, because the original, significance of the soma.

The heavenly soma is produced by boring in the clouds—thus through a symbolic act of procreation. The conclusion seems to me to lie near, the perception in the soma of a symbolic representation of semen. Semen has a vivifying and immortalizing, because propagating effect. It fertilizes like the heavenly soma which as dew and rain falls upon the earth. We are able now to understand why the sagas of the origin of fire and of the nectar of the gods are so closely related to each other. The procreative parts of the body and the semen can not be separated from one another.

This oldest stratum of the myth, the sexual significance of which is now plain, underlies, as in the fire saga, a second stratum. It is differentiated also in this case from the first by the personification of the phenomena of nature, that is, by the appearance of man-like divine beings, by an intensive sexual repression. We meet a half divine being that bears the name of Soma. Soma is a genius of strength and procreation; our assumption of the peculiar nature of Soma receives here a full confirmation. In certain myths Agni, already known to us, appears in the place of Soma.

It is of great interest, at this point, to refer to a Greek myth in which the idea of the origin of the nectar of the gods by boring was held. It especially opens the way to an understanding of the latest stratum of the Soma saga. Zeus desired to get to Persephone, who was hidden in the cloud mountain. To this end he changed himself into a serpent and bored into the mountain. This sexual symbolism, without further details, is incomprehensible to us. From the union of Zeus and Persephone comes Dionysus, the god of wine, a personification of the nectar of the gods. Dionysus was nursed by the Hyades; these are as rain goddesses likewise a personification of the heavenly soma; as a constellation they preside over the rainy season.

Zeus of Greek mythology corresponds to Indra of the Indian. He is also the god of the clear, unclouded heavens. He also plays an important rôle in the soma saga. He becomes the soma robber. Indra brings soma out of a cave, as Matarichvan does Agni

in the third stratum of the Prometheus saga, in which the Gandharvas[38] guarded him. This robbery was carried out by Indra in the form of a falcon. In many sagas the robbery of the soma is also ascribed to Agni, who likewise takes on the form of a bird. We have met Agni before as the fire-robbing bird. Now we also learn to know him as the robber of the soma and have therein a remarkable identification before us. The falcon must contend with the Gandharvas for the possession of the soma. In the struggle he loses a feather which falls to the earth and changes into a soma plant. We have already met a quite similar story in the analysis of the Prometheus saga. Like the latter, the soma saga, in its third stratum, is so distorted that in the manifest content the sexual is wholly dispensed with.

We must go still further into the significance of the soma plant and will find on the way new evidence for the identity of the soma with human semen. The branch of the soma tree, a symbolic representation of the male organ, possesses wonderful attributes. It gives them not only to the soma drink; it serves much more the most various uses and ceremonies. From the mountain ash are obtained the so-called divining rods which serve, among other things, to locate subterranean water. According to a very ancient custom the herdsmen struck their cattle in the spring with a branch of the mountain ash to increase their fruitfulness and production of milk. The branch of the soma tree turns also into a magic wand such as the staff of Hermes and the thyrsus with which Dionysus struck wine from the rock. We have already mentioned the biblical story in which Moses strikes water from the rock with his miraculous staff; the symbolic significance of this staff becomes still clearer, when we recall, that it changed into a serpent before the eyes of Pharaoh.[39]

(*To be continued*)

[38] Kuhn has shown in a special work that from the Gandharvas have come a species of demon, the Centaurs of the Greek saga.

[39] The process of erection has plainly stimulated the phantasy activities to an extraordinary degree; the transformation of the staff (phallus) into a serpent signifies the return of the phallus to the quiescent condition.

Periscope

Revue Neurologique

(Vol. XX, No. 1. January 15, 1912)

1. Meningeal Tumor. Crural Paraplegia Due to Compression of the Spinal Cord. Removal of the Tumor. Cure. J. Babinski, P. Lecène, and Bourlot.
2. The Pathogenesis of Presbyophrenia. Dide and Gassiot.
3. Little's Disease. P. Londe.

1. *Meningeal Tumor.*—The patient was sixty-two years old. Symptoms began with pain and weakness in the legs, progressing to complete paralysis of the lower extremities. The reflexes were increased and there was a positive Babinski reflex. There was a loss of all forms of sensation from the distribution of the twelfth thoracic root downward except in the soles of the feet (S. 1) and an area about the anus (S. 4 and 5). The lamina of the seventh to the tenth dorsal vertebræ were resected, the dura opened and a tumor the size of an olive was found at the level of the body of the tenth dorsal vertebra. The tumor was removed. The wound healed by first intention. Power in the limbs began to return the third day after the operation. Six months after the operation cure was practically complete.

2. *Pathogenesis of Presbyophrenia.*—Presbyophrenia is characterized by: a constant amnesia, an allopsychic disorientation, fabulation and illusions of false recollection with relative preservation of intelligence. It may be explained as: a form of senile dementia; or as a variety of the polyneuritic psychosis; or as due to liver and renal insufficiency; or by a partial cerebral disturbance of the function of the occipital lobe. The author objects to the first explanation because cases may occur at the age of forty. He objects to the second as a contradiction in terms since there is no polyneuritis. Liver and renal lesions may be observed in these cases but are coincidences and have no causal relation. Presbyophrenia should be considered as an occipital syndrome. It is probably due to a venous stasis in the cortical area for visual memories.

3. *Little's Disease.*—A general review of the subject with an extensive bibliography. The term should be applied only to those cases of bilateral spastic paraplegia, with a tendency to regression and due to causes operative at birth. The lesion may be spinal, cerebral or cerebrospinal. The pathogenesis varies in different cases. When associated with idiocy the case should be classified as a congenital encephalopathy, not as Little's disease. When arising from causes operative after birth they should be called infantile diplegia, not congenital.

(Vol. XX, No. 2. January 30, 1912)

1. Brachial Monoplegia and Facial Paralysis on the Left Side. Conjugate Deviation of the Eyes to the Right. Lenoble and Aubineau.
2. Differential Diagnosis between Acute Hydrocephalus without Increase

in the Size of the Head and Cerebral Tumor by Means of the Roentgen Rays. M. Bertolotti.

1. *Brachial Monoplegia.*—The patient had contracted syphilis one year before the development of the symptoms which came on suddenly. There was a flaccid paralysis of the left arm and the left side of the face was paralyzed. The patient did not respond to questions. The knee jerks were lost. There was no Babinski reflex. The pupils did not react to light or in accommodation and the left pupil was dilated. Both eyes were strongly deviated to the right. The eye grounds were normal. Lumbar puncture showed an abundance of leucocytes. Necropsy revealed a meningitis and perivasculitis. There were no localized lesions. The author explains the symptoms as due to a toxin.

2. *Acute Hydrocephalus.*—The patient was a child of 12 who presented signs of increased intracranial pressure and cerebellar symptoms such as: asynergy, opisthotonus and mydriasis. There was no paralysis of the cranial nerves. Following the suggestions of Dr. Wm. G. Spiller, of Philadelphia, an X-ray picture of the skull was taken which showed the outlines of the cerebral convolutions and led to the diagnosis of acute hydrocephalus due to ventricular serous meningitis; which was confirmed by necropsy. The author's researches show that intracranial pressure due to brain tumor does not produce these digitiform impressions on the skull shown on X-ray examination.

(Vol. XX, No. 3. February 15, 1912)

1. Apparatus and Methods of Clinical Dynamometry. E. Castex.
2. Infantile Spinal Paralysis, Late Recurrence of Muscular Atrophy and Kyphoscoliosis. Eugène Gelma.

1. *Dynamometry.*—A description of several pieces of apparatus for estimating the force of various movements of the extremities and illustrations of their use. The apparatus is remarkable for its simplicity and adaptability to the measurement of many different movements.

2. *Infantile Spinal Paralysis and Muscular Atrophy.*—The patient had anterior poliomyelitis at the age of eight years with a residual paralysis in the left arm and both legs. Ten years later an atrophy began gradually to affect the muscles of the right arm and left leg. An attack of maniacal excitement occurred at the age of twenty-five, lasting eight months, and another at thirty-five. Examination at the later period showed a marked atrophy and weakness in the left arm and right leg. The right arm and left leg were much less affected.

(Vol. XX, No. 4. February 29, 1912)

1. Progressive Lenticular Degeneration, Family Nervous Disease Associated with Cirrhosis of the Liver. S. A. K. Wilson.
2. Transitory Pseudobulbar Paralysis Originating in the Pons, Paresis of all Four Extremities in a Girl with Mitral Stenosis. Halipré.
3. Concerning "The Cutaneous Reflex of the Back." Bertolotti.
4. More Concerning the Sign of Chas. Bell. G. Fumarola.

1. *Progressive Lenticular Degeneration.*—The author has observed four cases of this rare disease, three with necropsy. It occurs between the ages of ten and twenty-five, usually with a gradual onset, and termi-

nates fatally in from four months to five years. It is characterized clinically by a bilateral intention tremor affecting chiefly the distal segments. Rarely the movements are choreiform. The extremities are spastic especially in the proximal portions. There is dysarthria and dysphagia. There is sometimes spasmodic laughter and increased emotivity. There are no sensory changes, no nystagmus, no ophthalmoplegia, no true paralysis and the reflexes are usually normal. Pathologically, there is a bilateral, symmetrical degeneration of the lenticular nuclei. This disintegration begins in the vicinity of the small bloodvessels. There is constantly found an hepatic cirrhosis which is partly multilobular; partly monolobular; non-syphilitic; and which shows, histologically, a marked degeneration, but at the same time some regeneration, of the liver cells. The author believes that this regeneration accounts for the absence of the symptoms of the hepatic lesion. The hepatic cirrhosis is probably the primary condition and gives rise to some unknown toxin which has an elective action on the lenticular nuclei.

2. *Transitory Pseudo-bulbar Paralysis.*—A child, aged three years, complaining of articular rheumatism complicated with endocarditis suddenly became weak in all four extremities with a paralysis of the left side of the face of peripheral type and complete anarthria and dysphagia. There was no impairment of intelligence, no deafness, no blindness and no agraphia. The anarthria and dysphagia gradually improved, the paralysis remained about the same and there was spasmodic laughing. Death occurred about four months after the onset due to cachexia. Autopsy showed an area of softening in the pons extending from the junction of the pons and cerebral peduncles to the junction of the pons and medulla. As the lesion did not extend into the medulla the anarthria and dysphagia represented a pseudo-bulbar paralysis of pontile origin. Spasmodic laughing is a symptom of pseudobulbar paralysis. There was no sensory disturbance.

3. *Cutaneous Reflexes of the Back.*—Noica, in the proceedings of the Paris Neurological Society (Revue Neurologique, Jan. 30, 1912, p. 134), described a reflex by which an irritation applied to the skin above the crest of the ilium caused a contraction of the spinal muscles of the same side. He named it the sacro-lumbar reflex. It is constant in infants, rare in adolescents and never occurs in adults or in the aged. Bertolotti calls attention to the fact that he described the same phenomena in 1904 (Revue Neurologique, Dec. 15, 1904), naming it the dorso-lumbar reflex.

4. *Sign of Chas. Bell.*—In reference to a discussion between Campos and Bonnier on the same subject. It should not be called a sign because it is simply a normal physiologic phenomenon made apparent by the patient's inability to close his eye. The upward and inward rotation of the eyeball should be called simply the phenomenon of Chas. Bell.

(Vol. XX, No. 5. March 15, 1912)

1. Crossed Atrophy of the Cerebellum in an Adult. André-Thomas and Mlle. Kononova.
2. Contribution to the Study of the Mental Disturbances in Exophthalmic Goitre. Halberstadt.
3. Chemical Examination of the Cerebrospinal Fluid. Its Clinical Value. Mestrezat.

1. *Crossed Atrophy of the Cerebellum.*—It is generally considered

that a crossed atrophy of the cerebellum occurs usually with infantile hemiplegia. Four cases are reported aged, respectively, 26, 39, 43, and 77 years at the time of onset of the hemiplegia. The duration of the condition in the first patient was 33 years; in the second, 40 years; in the third, 10 years; in the fourth, 12 years. The cerebral lesions were areas of softening destroying the frontal and, partly, the parietal convolutions. There was an atrophy of the opposite hemisphere of the cerebellum in all of the cases. The vermis was not affected. The cerebellar peduncles were degenerated.

2. *Mental Disturbances in Exophthalmic Goitre.*—Two cases are reported. The first was a case of manic depressive insanity in a patient with some of the signs of Graves' disease. The second patient was a "degenerate," mentally, with emotionalism and changes in character, without intellectual debility. This form of degeneration, "Basedowoide," is not rare.

3. *Chemical Examination of the Cerebrospinal Fluid.*—Through chemical analysis of the spinal fluid it is possible to diagnose tuberculosis meningitis from other forms, myelitis and encephalitis. Also the general infections and intoxications, with or without meningeal reaction, renal insufficiency, and various blood dyscrasias give rise to a peculiar and characteristic chemical composition of the spinal fluid in each case.

C. D. Camp.

Deutsche Zeitschrift für Nervenheilkunde

(Band 43. Heft 3 to 6)

This number contains the Proceedings of the Fifth Annual Meeting of the German Neurological Association.

The subject of syphilis of the nervous system and its treatment with salvarsan formed the most important part of the program. Among the other subjects contributed, were "The bulbar form of acute anterior poliomyelitis; clinical and pathological study of infantile muscular atrophy; caloric nystagmus in neurologic diagnosis; the nervous symptoms of tobacco smokers; abortive forms of myxedema, etc.

The Importance and Value of Modern Therapy in Syphilis of the Nervous System formed the subject of Nonne's article. His results with salvarsan in 40 cases of cerebrospinal lues indicated that it was quicker and more effective than Hg or Ki, and that changes were produced which were not possible with Hg. More clinical experience he thought was necessary in order to decide which forms were more favorably influenced by salvarsan and which by Hg. He believed that the following statement of O. Vogt's was a good one to use: "Salvarsan was contra-indicated in wide-spread destruction of the nerve substance, wide-spread softening or sclerosis, or systemic degeneration as well as general cerebral arterio-sclerosis."

In tabes, salvarsan showed no marked results. In paresis it was no more a cure than Hg.

He discussed the dosage and frequency and combination of Hg with salvarsan and concluded as follows:

That salvarsan frequently had a marked influence on true syphilis of the nervous system, as much so, as in syphilitic disease elsewhere.

That it was not a sterilisatio magna.

Intensive treatment of the primary and secondary syphilis, with moderate and large doses, might be detrimental to the nervous system.

Tabes and pareses could be treated with salvarsan without harmful effects.

Salvarsan had not been proven superior to Hg and Ki.

That neurologists have in salvarsan an important anti-syphilitic treatment.

Benario's paper on Neurorecidive showed a comparative study of cases treated by both methods, namely 606 and Hg, in which was shown a similar percentage of recurrences, with about the same percentage of frequency in the involvement of certain cranial nerves. Benario believed that 606 was not the cause of the symptoms, but that the neurorecidive was a syphilitic process.

These papers were discussed by Oppenheim, Ehrlich, Saenger, Finger and others.

Ehrlich brought out the fact that intensive treatment lessened the number of neurorecidive, and that errors in technique were the cause of many of the symptoms following the injection.

Frankl-Hochwart contributed a paper on the nervous symptoms of tobacco smokers. The chief symptoms were cardiac palpitation with general nervousness. Less frequent were vertigo and insomnia, tremor, dyspepsia, obstipation and diarrhea.

Complete abstinence would be followed by pressure in the head, light-headedness, vertigo. Some would have violent cardiac palpitation.

Saenger reported 7 cases of the abortive form of myxedema in which he demonstrated that the characteristic skin changes could be absent, or slightly present, or the skin instead of being pale could be congested. Also the mental symptoms could be absent, and that distinct neurasthenic symptoms could be found. Palpation of the region of the thyroid gland was a distinct aid in diagnosis.

S. Leopold (Philadelphia).

New York State Hospital Bulletin

(Vol. V, No. 1. May, 1912)

1. Demonstration of Work done by Patients in Kindergarten. Hutchins.
2. Discussion on Occupations for the Insane and their Therapeutic Value. C. F. Haviland.
3. *A Study of the Clinical Manifestations of Syphilis. Matthews.
4. A Study of the Outcome of Agitated Depressions of the Involution Period in Women. Ballintine.
5. *A Discussion of the Paranoic Conditions with Special Reference to Mental Deterioration. Taddiken and Lane.
6. *A Consideration of Paranoid Ideas in Manic Depressive Psychoses. Waterman.
7. *Paresis and Syphilis. King.
8. A Comparison of the Various Methods of Formaldehyde Fumigation. Porter.
9. The Sterilization of Defectives. Obendorf.

10–11. Quarterly Conference Minutes.

12. *(*a*) Two Cases of Tumor of the Right Temporal Lobe and Two Cases of General Paralysis with Aphasic Symptoms. Carpenter.

*(*b*) A Review of the Cases of Manic Depressive Insanity not early Recognized. MERRIMAN.

(*c*) On the Relationship between General Paralysis and Some Forms of later Cerebral Syphilis. DUNLAP.

*(*d*) Two cases of Congenital Defectives with Multiple Heterogeneous Newgrowths Occurring in the Integument, Viscera and Central Nervous System. LAMBERT.

(*e*) A Case of Spastic Paraplegia. HELMER.

3. *A Study of the Clinical Manifestations of Cerebral Syphilis.*—Matthews made a study of twelve cases of brain syphilis with autopsy findings and described four clinical cases also suggestive of syphilitic brain disease. He states in conclusion that the question of diagnosis between cerebral syphilis, the endarteritic or the gummatous types, general arteriosclerosis, and dementia paralytica must be settled largely by serological tests which in these cases was far from being complete.

5. *A Discussion of Paranoic Conditions with Special Reference to Mental Deterioration.*—The authors have described in detail four cases in an attempt to differentiate paranoic conditions from the paranoid type of dementia præcox and illustrate by symptoms in case IV their meaning of deterioration which necessarily excludes a paranoic condition.

6. *A Consideration of Paranoid Ideas in Manic Depressive Psychoses.*—The author cites several cases of manic depressive insanity in which paranoid ideas were present and concludes that paranoid beliefs may be due to (1) toxic elements; (2) as an elaboration of depressed ideas; (3) transitorily evidenced at the beginning of the mental aberration; (4) directly traceable to actual happenings and later elaborated.

7. *Paresis and Syphilis*—King has given a short résumé of several cases clinically dementia paralytica which have come to autopsy and which showed no paretic process but which did show a syphilitic process either in the meninges or the blood vessels. He refers to disintegration of the whole personality, progressive mental and physical deterioration, disorders of pupillary and tendon reflexes as suggesting paresis in contradistinction to cerebral syphilis as not so clearly progressive, less profound and less general deterioration. In none of the cases reported were the serological tests complete.

10–11. *Quarterly Conference Minutes:* (*a*) Two Cases of Tumor of the Right Temporal Lobe and Two Cases of General Paralysis with Aphasic Symptoms.—The report of two cases of tumor of the temporal lobe: in the first case, left sided pyramidal signs, right third nerve paralysis, olfactory hallucinations and an aphasic disorder comprised the symptom-complex,—autopsy findings indicated a lobular glioma in the right temporal lobe. The second case presented physical signs which suggested general paralysis such as diminished knee jerks, diminution in pain sense, coarse tremors and pupillary disturbances. Lumbar puncture showed a brownish-red fluid without any increase in pleocytes. Autopsy findings produced a large cellular glioma in the right temporal lobe and no indication of a paretic process.

The two cases of dementia paralytica presented the following symptoms of an aphasic type: (1) the patient was paraphasic, he was unable to repeat, unable to execute simple written commands, or to pick out objects named although he knew their use. Writing was lost, could not write his name but could copy letters, simple figures, simple words and

geometrical signs. He could read letters, figures less so and was unable to read sentences. At the autopsy the cerebrum showed no gross defect but there was a poverty of nerve cells in the left parieto-tempero-occipital region and an intense general paralytica process in the frontal region.

(2) The second case showed limited spontaneous speech, to that of recurrent utterance. Her repetition was poor. She could read printed sentences, could not read writing as well. She could not name objects seen or heard but could pick out objects fairly well. She could carry out commands. Writing abolished and poor at copying. Physically there was right arm weakness, but leg showed no variation. At the autopsy there was found a true paretic process with a left hemiatrophy.

(*b*) A Review of Cases of Manic Depressive Insanity not Early Recognized.—A report of several cases in which the manic features, such as productivity of talk, commenting, emotional elevation, sudden fluctuation in mood, etc., were overlooked and transitory hallucinations, paranoid trends, etc., misled the examiner.

(*d*) Two Cases of Multiple Heterogeneous Newgrowths.—Two excellent reports of multiple new growths in various regions of the body in congenitally defective individuals.

(*e*) A Case of Spastic Paraplegia.—The report of a case of spastic paraplegia in a woman having had five attacks of mental aberration, two excitements and three depressions.

FARNELL (Providence, R. I.).

Trabajos del Laboratorio de Investigaciones Biologicas

(Vol. 9, Nos. 1, 2, 3. 1911)

1. Early Phenomena of Neuronal Degeneration in Cerebellum. S. RAMON CAJAL.
2. Early Phenomena of Traumatic Degeneration of the Axis Cylinders of the Cerebrum. S. RAMON CAJAL.
3. Influence of Neurotropism by the Regeneration of Nerve Centers. F. TELLO.
4. Neuroglia and the Pathological Interstitial Elements of the Cerebrum Stained by the Reduction Method and its Modifications. N. ACHUCARRO.
5. Nuclear Changes in the Cerebral Pyramids in Rabies and Experimental Sporotricosis. N. ACHUCARRO.

1. and 2. *Early Degenerative Changes in Neurone and Cylinder Axis.*—A number of investigators, among them Rossi, Marinesco and Minea, have verified Cajal's observations on the injured axis-cylinders, especially of the Purkinje cells of the cerebellum, so that the facts stand pretty thoroughly established. The observations of these various investigators were based on specimens of human cerebellum in various pathologic states. In order to complete the anatomo-pathological picture of the degenerative and reactive phenomena which take place in the fore and midbrain cells Cajal undertook a series of researches on the early effect of aseptic lesions upon these areas. The two contributions mentioned above represent a full report on the findings.

These two contributions are full of numerous details that do not permit abstraction. For these minute details the originals must be consulted. Here will be indicated only a few of the more salient features brought out by Cajal's investigations.

No processes of regeneration were observed in the cerebellum following trauma. The recurrent collaterals observed and described by Rossi, Marinesco and Minea, are only products of hypertrophy involving preexisting collaterals situated between the cell body and the axonal node. This hypertrophy therefore does not represent a new growth. The hypertrophy may be considered as due practically to functional excess of the collaterals since the latter represent the only road open for the nervous impulse to travel towards the mutilated neurone. Similar hypertrophy of the collaterals may be noted in the pyramidal cells of the cerebrum with mutilated axis.

The Purkinje cells which have lost completely their axone do not perish at once. Many of them persist, at least for a few days, during which time they manifest various degrees of atrophy, hypertrophy and transformation into dendritic neurofibrillar reticulum. The injured dendrites of the cerebral as well as of the cerebellar cells, as a rule, show no hypertrophy and no regenerative reactions. But in one young animal experimented upon the dendrites of the Purkinje cells presented various nodular enlargements and their reaction to the injury received was also shown by a change in the diameter as well as in the form, length and structure of the secondary and tertiary branches.

In the midbrain, the large axones, when injured, are not capable of regenerating their peripheral portion. Their central end shows some new growth but this new growth does not seem endowed with sufficient vitality to break through the cicatrix and reestablish the severed communications.

Two sets of degenerative processes are discernible in the peripheral ends of the severed central axones, the same as in a similar injury of the nerve axones: an early traumatic degeneration and a latter process involving the whole conductor; the latter corresponds closely to the Wallerian degeneration. The central end of the severed axone shows only the ordinary signs of traumatic degeneration.

It appears that the Purkinje cells disintegrate more rapidly than the arborizations with which they come in contact. Thus the ramifying plexuses may be found practically intact at a time when the cellular protoplasm is practically disintegrated. This fact is of great theoretical import because it favors the doctrine of the discontinuity of the associated neurones.

The observations on the regenerative processes are too minute to permit abstracting. Their import seems to be that such processes are extremely weak, if not doubtful altogether. This conclusion, however, is only tentative as the experiments extended over comparatively brief periods and the results, so far as the regeneration phenomena are concerned, are not in harmony with those obtained on similar observation upon the optic nerve and the medulla.

3. *Influence of Neurotropism on Regeneration.*—F. Tello investigated the marked difference in the regenerative processes following peripheral nerve lesions when compared with similar processes in the central nervous system, where they are at their lowest ebb. For this purpose the author compared sections of fore and midbrain and optic nerve. Is the comparative incapacity of the nervous system to regenerate due to some incapacity of the mechanical obstacles, absence of preestablished routes, or to some peculiar defect in the Schwann cells, the chief if not the only elaborators of neurotrophic material?

Tello found that the nerve centers possess normally a certain power

of regeneration which may be stimulated into activity through experimental excitation. Ordinarily this capacity remains latent and is therefore imperceptible.

4. *New Method of Staining.*—Application of the Bielchowsky method after brief fixation in formol brings out the perivascular, large stellar neurological elements. The staining of the centrioles is particularly clear.

Pieces kept in 10 per cent. formol, then placed for 5 to 37 days in Weigert's mordant, washed and treated by Cajal's method, followed by the gold solution, give sections in which may be discerned very clearly the ameboid neuroglial cells and other elements involved in phagocytic activity. Comparative analysis by Cajal's methods of the nuclear changes in the cells of Ammon's horn.

J. S. VAN TESLAAR (Boston)

Journal die Psychologie normale et pathologique

(Ninth Year, No. 2. March–April, 1912)

1. Emotion and Hysteria. J. BABINSKI and JEAN DAGNAN-BOUVERET.

1. *Emotion and Hysteria.*—This is a lengthy study in psychology, difficult to abstract, but permitting the following conclusions: namely

1. That emotion (emotional-shock) cannot by itself provoke the appearance of hysterical accidents.

2. That it is in fact preventive of both their development and continuation.

3. That for the appearance of these accidents, there must be the intervention of a suggested idea, sustained, it is true, by systematized affective states,—an idea of which they are only the expression.

(Ninth Year, No. 3. May–June, 1912)

1. The Messiahship of a False Dauphin (Naundorff). P. SERIEUX and J. CAPGRAS.
2. Isochronism in Music and Poetry. PAUL VERRIER.

J. NETTLER (Chicago)

Allgemeine Zeitschrift f. Psychiatrie

(Vol. LXVIII, Heft 2. 1911)

1. Penitentiary and Mad-House at Celle. MÖNKEMOELLER.
2. Methods of Spontaneous Recovery in Schizophrenia. BERTSCHINGER.
3. Attempts at Cure in General Paresis. W. PLANGE.
4. Disadvantages of Work Therapy in Acute Psychoses. M. KAUFMANN
5. Severe Reaction in Toulouse-Richet Method of Treating Epilepsy. W. H. BECKER.

1. *The Penitentiary and Mad-House at Celle.*—The author gives an account, based upon old records and "acts" of the above institution which cast an interesting light upon the life of its staff and its inmates, during the latter part of the eighteenth century. According to these records, the patients fared not so much worse then than they do in most places to-day and there is little evidence of the inhumanity which we have been accustomed to consider as part of the management of the insane at that time.

2. *Spontaneous Recovery in Schizophrenics.*—An attempt to explain, upon a Freudian basis, the correction of delusional conditions in precocious dements. The outbreak of this disease he thinks can be considered as an eruption of the subconscious into the conscious sphere. The reaction to this is very different in different cases, depending upon whether it occurs gradually or suddenly and upon the age and the psychical constitution of the individual. The morbid manifestations are however no other than the reaction of the patient to the new situation. If the patients act and think in the sense of the imaginary wish-fulfilment, ignoring the real exterior world, they appear confused. Others appear bewildered at the contradiction between the real and the imagined. Others again act, now according to one, and again according to another part of their content of consciousness, and so appear to us as contrary, unreliable and perverse. Or if their actions are a sort of compromise, they appear peculiar, finicky, affected and stereotyped. Usually they conduct themselves in conformity with the outside world except at certain points of contact between real and unreal. If improvement or recovery takes place, this is manifested by the patient's gradually or suddenly beginning to conduct himself in conformity with his real situation. From a study of the material which has come his way, the author concludes that the patient regains mastery of the subconscious in one of three ways. (1) By correction of the delusions; (2) by resymbolizing them in conformity with his actual surroundings; (3) by evasion of the complex. (For instance, a man who developed in a state of confusion a delusional system of a voyage to New York and back, with all its details, when he began to clear up explained the whole as due to confusing his own person with that of his brother who had actually made the journey.) In the cases narrated under this head a common point is that the "Wish-fulfilling delusional system" in some way comes to a certain conclusion and the way is cleared for recovery.

3. *Attempts at Cure in General Paresis.*—After reviewing the various therapeutic measures which have been tried in general paresis, the author gives the results of careful blood examinations made upon twenty patients who had been systematically treated with injections of arsenophenylglycin in the average dose of grm. 1.0 on two succeeding days. His results show that on an average the hemoglobin was increased 2.63 per cent., the sp. gr. 0.14 per cent., the number of red corpuscles 0.24 per cent., the number of white corpuscles 13.11 per cent. among the latter the mast cells being specially increased (111.63 per cent.). He interprets this as indicating that in the Ehrlich preparation we have a powerful agent, with which, if applied sufficiently early, we may yet obtain results far better than have heretofore been attainable.

4. *The Disadvantages of Work-therapy in Acute Insanity.*—In the face of the present enthusiasm for systematic work as a therapeutic measure in insanity, the author feels called upon to sound a warning as to its possible ill effects in acute cases, for the following reasons: (1) Many insane persons suffer from disturbance in the temperature regulation, hence should avoid the increased heat production which comes with muscular exercise; (2) A diseased brain has to act more in muscular exercise than during rest in bed, and there are probably more toxic products produced during activity. In diseases of other organs, especially in those of inflammatory nature tendency to recovery is enhanced by rest in bed, and in diseases of the brain the indication for rest is even

more clear; (3) Variety can be furnished by suitable means of amusement by moving the bed out of doors, etc.; (4) As in internal diseases regulation of diet is important, in brain diseases the same ground principles of avoidance of nitrogen retention and avoidance of too great number of calories should be observed.

5. *An Unusually Severe Reaction to Toulouse-Richet Method in Epilepsy.*—The case of a woman of 48 years, long epileptic, who, while she had few or no fits while under the bromide and hypochloruration treatment, lost weight and became very much excited and violent. From this treatment the author would exclude: (1) Cases of organic disease of heart, vessels, lungs or kidneys; (2) Hystero-epilepsy; (3) The marked erotic forms of epilepsy; (4) Cases with the epileptic alteration of character, but with few fits; (5) Cases in which stupor is marked. The treatment in any event should only be carried out in an institution where the psychical condition, frequency of fits and weight curve can be closely watched and the amount of bromide used should be below that recommended by Toulouse and Richet.

(Vol. LXVIII, Heft 3. 1911)

1. Homosexuality and Psychosis. P. NAECKE.
2. Diagnosis of Dementia Præcox and Hysteria. LUECKERATH.
3. Etiology of Epilepsy at Puberty. G. BENN.
4. Psychology of Desertion. M. ROHDE.
5. Delirium Tremens and Brandy Tax in Breslau. E. FESKE.
6. Psychogenic Processes and Hysteria. K. BONHOEFFER.

1. *Homosexuality and Psychosis.*—The generally received assumption that homosexuality arises upon a basis of degeneration, the author thinks probably incorrect and is of the opinion that many writers upon the subject lack the necessary experience to view the subject in its entirety, since their observations have had to do almost exclusively with insane or partially insane homosexuals. The homosexuality generally met with among the insane is in fact he thinks not a true, but a pseudo-homosexuality. From a study of the literature and from his own experience he concludes (1) That the homosexual appear to be hardly more, rather less, liable to psychoses than the heterosexual. (2) That homosexual acts seen in the asylum are almost exclusively pseudohomosexual and have nothing to do with true sexual inversion.

2. *Dementia Præcox and Hysteria.*—The differential diagnosis between hysteria and dementia præcox is often unusually difficult, in many cases impossible. The symptomatology of both diseases presents many points of similarity and the difficulty in diagnosis is much increased, when as is sometimes the case hysterical symptoms occur in a case of dementia præcox. Particularly is difficulty apt to arise in estimating certain stuporous and motor phenomena, whether they are hysterical or katatonic. The author discusses the subject on the basis of six illustrative cases—all males—observed at the Bonn Asylum. A study of the histories of these cases shows how frequent the combination of symptoms, suggesting on the one hand hysteria, and on the other katatonia, is, how carefully the method of onset and the previous history of the patient must be studied and finally that in many cases time alone will clear up the diagnosis, since the presence or absence of decided dementia is decisive. From the close resemblance of the symptomatic picture one cannot escape

the conclusion that there exists a certain relationship between the two conditions. Both are endogenic psychoses, and according to the ideas of Freud and Jung both are to be referred to sexual trauma in youth. It is certain that dementia præcox can begin with hysterical symptoms, that the diagnosis may be long impossible and only the final outcome may prove decisive.

3. *Epilepsy and Puberty.*—The author studied the clinical histories of 184 epileptics 92 males and 92 females from the Wuhlgarten Epileptic Institute, as to the causative factors accused of producing the disease. These factors he classes under the two heads of endogenic and exogenic, placing under the first head, neuropathic heredity and deleterious influences acting prior to birth. As puberal epilepsy he considers all cases in which the onset of the disease was between the years of 12 and 22. He found the following percentage figures:

	Average Age at Onset.	Endogenic Causes.	Exogenic Causes.	No Cause found.
Males	16.00 yrs.	65.03 %	21.73 %	13.24 %
Females	13.43 yrs.	53.30 %	14.13 %	32.57 %

That sexual maturation plays an important part in the causation of epilepsy seems to be clearly shown. It is to be noticed that in the females, who mature earlier, the average age of onset is considerably below that in the males and in the cases studied by the author the connection of the attacks with the menstrual function seemed unmistakable.

4. *Psychology of Desertion.*—A discussion of the mental processes, which were at the bottom of desertions, in the cases of two soldiers. The first was a hereditary degenerate of 22 years, whose psychopathic condition was accentuated by faulty bringing up, onanism and alcoholism, in whom the immediate cause of departure without permission upon several occasions, seemed to have been certain hyperquantivalent ideas connected with a woman, with whom he had relations and who though hardly charming to others, seemed to have a powerful attraction for him sexually, these ideas being of such intensity that acting upon his weak personality they led to a sort of imperative act, the desertion.

The second case was that of a man of 21 years, of imbecile type, in whom certain dreams of great vividness, on one occasion of a mountain valley in which numbers of game animals were waiting to be shot, on another of a beautiful landscape, leading in the country lad to homesickness, persisted into his waking hours with such intensity as to cause an uncontrollable impulse to desert.

5. *Delirium Tremens and Brandy Tax.*—Breslau had formerly the unenviable distinction of having more cases of delirium tremens than any other German city in the brandy-consuming district, except the larger Berlin and Hamburg and possibly a few of the coast cities. This in contradistinction to the beer-consuming Munich, where according to Kraepelin only 9.2 per cent. of all alcoholic insane show delirium tremens, while in Breslau fully 50 per cent. of the alcoholic cases are delirants. The number of cases in the Silesian city had also been steadily increasing in a manner out of proportion to the increase in the population. After an increase in the brandy tax of about 50 per cent. in July, 1909, and a resulting boycott declared against this beverage by the Social-Democratic Party in the last quarter of this year the number of cases of delirium

tremens was noticed to have fallen off fully 50 per cent. The other forms of alcoholic mental disturbance showed also a decrease, but not so striking, of about 28.5 per cent. The number of cases remained below the normal during the first three quarters of 1910. There was no increase at the start of the number of cases of delirium—abstinence delirium—and from his investigations the author thinks that it was the young workmen who were most favorably influenced, the more confirmed drinkers not cutting themselves off entirely from their accustomed stimulant. While official statistics for all Germany showed a 30 per cent. decreased consumption of alcohol as a drink, an unofficial inquiry from the proprietors of 30 drinking places in Breslau, gave an estimated decrease in sales of from 25 per cent. to 80 per cent. According to police statistics during this same period arrests for drunkenness and the less serious offences frequently traceable to drunkenness, fell off about 21.3 per cent. In the more serious offences and crimes the diminution was not apparent.

6. *Psychogenic Conditions and Hysteria.*—Since the very definition of hysteria and what constitutes it are disputed, there arises at the start a difficulty. The author considers as psychogenic, such conditions and diseases as are called forth by conceptions especially by those which are characterized by a strong emotional tone. He thinks that a good starting point for the consideration of the subject is to take up observations upon the result of an occurrence tending to produce a severe emotional effect, upon a large number of people at the same time, and for this purpose finds nothing more fit than the Messina earthquake, whose psychological effect has been specially studied by Stierlin.

This latter author found as a result of this catastrophe a large number of psychical disturbances, to the majority of which however he was inclined to attribute as a common pathological substratum vaso-motor alteration. Stierlin saw cases of furibund delirium with fatal termination, Korsakow's symptom-complex, and a large number of vasomotor symptoms, palpitation, heart attacks, irregularity of the pulse, anxious anticipation, sleeplessness, terrifying dreams and night terrors, sudden sweating, in short the picture of heart-neuroses with indication of phobias. In the survivors there was later a certain apathy. Hysterical manifestations he saw almost exclusively in individuals who had been hysterical before the earthquake, while in 500 people examined one month after the catastrophe Bianchi failed to find one, showing the picture of a traumatic neurosis. The emotion of fright alone calls up a vasomotor-neurotic complex and the author thinks that the frequency of hysteria after railroad accidents lies not in the fright alone, but in the combination of this with the factor of wish for damages. The vasomotor symptom-complex can apparently develop in a perfectly normal person as a result of the emotion of fright and it is the only psychogenic symptom-complex which does not seem to need for its production a psychopathic constitution. All other psychogenic conditions imply a congenital psychopathic constitution. The psychogenic conditions and diseases arising upon a basis of degeneration present themselves under two chief types: (1) Those in which the symptoms observed are in the main an exaggeration of an already present affective constitution. (2) Those in which the psychotic picture is in direct contrast to the original psychopathic constitution. Every one knows of cases in which a death in the family a marriage engagement or its breaking off has set up an attack mania, while cases in which the taking on of responsibility as on marriage, the assumption of the management of a business,

etc., has been followed by an attack of depression, the "reactive depression" of Reis. The constitutional depressions have long been recognized and the attack may differ in no way from the depressive phase of manic depressive insanity, though inhibition is less frequent in it. The opposite condition of constitutional hypomania, though occurring, is much less frequent. The ordinary manic-depressive attack more usually occurs without any special psychical exciting cause. It is characteristic that the conception which sets off the attack of depression in constitutional cases, usually has the character of hyperquantivalence. Another group of non-hysterical psychogenic manifestations are paranoid processes arising upon the basis of hyperquantivalent ideas. These psychogenic paranoid querulant pictures the author meets now more frequently than formerly, in the damage-demanding victims of accidents, who are dissatisfied with the settlement offered or obtained. Among the unstable degenerates with easy affect-reaction and strong tendency to impulsivity are seen a number of epileptoid phenomena, delirious conditions, attacks of rage and excitement, tendency to destructiveness and filthy actions, tendency to aimless flight and wandering and psychotic fits, the so-called "affect epilepsy." Among these subjects also are found paranoid hallucinatory psychoses arising subacutely upon some psychotic cause. Lastly the author considers briefly a large class of cases, including the so-called "Prison psychotic complexes," Ganser's delirium, the psychogenic pseudo-dementia, stuporous and hallucinatory delirious conditions with pseudodementia and functional amnesia. To this class of cases also belong certain katatonic pictures, especially the cases in which katatonic symptoms appear every time the patient is committed. These cases the author thinks are to be diagnosed by the evident dependence of the attacks upon psychical factors, the intermixture of Ganser's symptom and the absence of any real defect through years of observation. Through all these conditions there seems to run a special psychogenic factor foreign to the previously described types, and the idea imposes itself that they represent in some way a "wish-fulfilment."

C. L. Allen (Los Angeles).

MISCELLANY

A Clinical Study of a Case of Phobia. Morton Prince. Journal of Abnormal Psychology, Vol. VII, No. 4. Oct.–Nov., 1912.

The patient is an unmarried woman, forty-one years of age. Her attacks, varying from time to time, present the following chief symptoms: (1) A feeling of unreality due to (*a*) "inability to feel the air," coupled with (*b*) a sensation of queerness of the body difficult to describe, a "pulling out feeling," a "horribly disagreeable feeling," (*c*) a feeling of wildness, of insecurity, of inability to rush. There is also present (2) confusion of thoughts, (3) the usual anticipatory fear ushering in the attack, at times, and (4) the ordinary physical manifestations of fear. In addition the subject experiences visualizations of herself in a convulsion. Furthermore, these attacks may be traced back either to some significant sensory stimulus occurring at the time or to some inciting memory images or thoughts.

Of these various syndromes, the "unreality of the air" is the most common and figures in all attacks. This experience of unreality is of two varieties: sometimes they are passive and at other times the unreality attacks are accompanied by fear or panic. The latter constitute the

phobia attacks proper. Visualizations of herself in a convulsion are common during both forms of attack. Her true obsession is the "unreality of air" feeling accompanied by fear. Careful examination discloses that it is a phobia of insanity and death. These two main complexes cluster about a number of the patient's reminiscences and always stand back of the "unreality of air" syndrome. It was also found that these complexes had become engrafted upon an earlier fear of insanity. This fear the patient had acquired through certain misconceptions concerning the nature and meaning of insanity dating from her early girlhood days. She was also beset by a fear of hell. These complexes—insanity, death, hell—furnished a special setting which determined for her the meaning of certain sensations and perceptions particularly at times when she was suffering from herpatic torpidity or felt otherwise depressed.

The fear of railroad trains, of being present among strangers, etc., which she experienced, was in reality due to her realization that if an attack should occur under such circumstances she would be helpless and could obtain no relief. "There is therefore no symbolism," concludes Dr. Prince, "and no abstruse or subtle meaning to the fear."

The indications for treatment are: first, find out the true object of the fear, the reason for the subject's phobia, and then "build up new complexes and rearrange the old ones to form new settings for the disturbing ideas so as to give these ideas a new and healthy meaning."

J. S. Van Teslaar.

Spinal Cord Injuries. E. D. Fisher. (J. A. M. A., Oct. 26, 1912.)

In his chairman's address before the Section on Nervous and Mental Diseases at the last session of the American Medical Association, the author discussed the operative treatment of traumatisms of the cord uncomplicated by fractures or dislocations of the spinal column. The greatest stress is laid on the question of the feasibility or advisability and time of an operation. He would depend more largely on the sensory disturbance than on any other symptoms in deciding in regard to the operation. When there is absolute loss of sensation, together with the usual loss of reflexes, and rectal and vesical paralysis and well-marked transverse demarcation of anesthesia, he considers the case unfavorable for operating. Any variation from that one condition indicates the possibility of a good result from operation. Since many cases have been reported of gradual return of sensation without an operation, he would almost always wait for this and until all sensory improvement had ceased before beginning to operate. When it ceases or the condition becomes worse operation should be no longer delayed. After a paralysis has existed for several months operation is almost futile. When the symptoms have not changed from the early condition of loss of reflexes, continued loss of sensation and a tendency to contraction of the paralyzed muscles, it seems to Fisher that operation is useless, whether done in a few months or many months after the injury. He would operate when there is the slightest chance of recovery, because in the hands of a skilful surgeon there should not be any special danger in the operation itself.

Spinal-Cord Surgery. C. A. Elsberg, New York. (J. A. M. A., Oct. 26.)

The author says that in the course of more than sixty spinal operations he has observed a number of lesions within the substance of the cord

which seem amenable to surgical treatment. This led him to investigate the frequency of such lesions and to attempt to develop a technic for their treatment. He is convinced that under proper treatment and with proper technic it is feasible and safe to incise the cord substance so as to allow the extrusion of localized intramedullary growths, to drain cysts in the substance of the cord, etc. He is at present experimenting on animals, and hopes in the near future to report some valuable results. Intramedullary tumors are not as rare as has been supposed, and in rare instances they have been operated on, but no well-worked-out methods have as yet been elaborated. Knowledge, as complete as possible, of the anatomy of the cord is the first essential of knowing where to make the incision with the least risk. Elsberg describes the anatomy, and concludes that in the lumbosacral region an incision may be made anywhere in the posterior column, but best a few millimeters away from the median line and not too near the posterior root zone, lest it damage the marginal fibers. The deeper the incision the greater risk of injury to the higher lumbar roots. In the dorsal and cervical regions the incision should always be made in the posterior median column, and the higher the level the nearer to the median line. In the upper and mid-dorsal regions the incision is best made from 2 to 4 mm. from the median line, while from the level of the mid-cervical region upward it should be made very near the median line, preferably in the posterior median septum. In rare instances, it might be necessary to incise the cord on its anterior aspect, and a small cut through the anterior fissure and into the anterior gray horn should not cause a great amount of motor or sensory disturbance. Aspiration of the cord can be done with safety, provided that only the finest aspirating needle is used and that care is taken not to injure the very fine blood-vessels which enter the cord from the arachnoid. A very fine von Graefe knife is the best instrument for the incision. The pia-arachnoid should always be first incised and carefully grasped with fine forceps; then the proper site of the posterior column is selected and an incision of less than 0.5 cm. long is made. It should be carefully deepened and enlarged, care being taken that it should be in the axis of the cord, which is best done with a blunt instrument. In the case of an intramedullary tumor the incision can usually be made into the most bulging part of the cord. No attempt should be made to enucleate it unless it is superficial and small; it should be left to extrude and be removed later by the method previously described by Elsberg. Great care must be taken to avoid hemorrhage and any injury to the cord; its substance should never be grasped by the forceps, and sponging should be done very gently, so as not to exert any pressure. After removal of the extrusion, one may attempt to suture the delicate edges of the pia by a few extremely fine silk sutures. When the anterior surface of the cord has to be incised it can usually be done after section of one posterior root. The cord can be gently lifted by the divided root and partly rotated on its own axis to bring the anterior column into view. A complete laminectomy (three spinous processes and laminae removed at least) is always needed with a thorough exploration and examination of the cord, and the pia and the dura are incised separately. While difficulty may at first be experienced in differentiating the cord substance from the capsule of the growth, in most cases it can be easily recognized. Careful palpation of the cord will often enable the operator to tell the pressure of a solid tumor or a fluid accumulation. Eight cases are reported, some of them only briefly. The article is illustrated.

Book Reviews

AN ANATOMICAL GUIDE TO EXPERIMENTAL RESEARCHES ON THE RABBIT'S BRAIN. A series of 40 Frontal Sections. By Prof. C. Winkler and Dr. Ada Potter. W. Versluys, Amsterdam.

The rabbit's brain having so often been the point of attack for problems in neurology it is strange that up to the present time a really reliable guide to its myelo and cyto architecture has been lacking. This want has been filled and well filled in this wonderful series of sections, reproduced in collotype from the work done in Winkler's laboratory in Amsterdam by Dr. Potter. The text is in English.

This piece of work will prove of invaluable aid in all later researches. It will serve to stabilize all forms of mental experiment upon this animal. Already Nissl has made use of its nomenclature in his study of the functions of the rabbit cortex.

JELLIFFE.

HANDBUCH DER GESAMTEN MEDIZINISCHEN ANWENDUNG DER ELEKTRIZITÄT, EINSCHLIESSLICH DER ROENTGEN LEHRE. In drei Bände. Herausgegeben von Prof. Dr. Med. H. Boruttan und Prof. D. med. L. Mann. Zweiter, Band, Zweite Hälfte. Dr. Werner, Klinkhardt, Leipzig.

The second volume, second half of this monumental work on electrotherapy is to hand. The General Principles of Electrotherapy are first taken up. This section is written by Dr. Salomonson, of Amsterdam; Dr. Maurice Mendelssohn writes a chapter on Special Electrotherapy of Muscle Disease and on Electrotherapy of Joint Diseases.

An especially interesting and important chapter is that by Ludwig Mann on Special Electrotherapy of Nerve Diseases. This is the best thing of its kind that we have seen. It takes up at least 150 pages of the entire book which is 600 pages in all.

Then follow chapters on rhinological and laryngological disorders in their relation to electrical therapy; the use of electricity in eye disorders, in ear diseases, in gynecology, in bone disease.

Franklinization, High Frequency, Illumination, Electrolysis, Cataphoresis, Phototherapy are other chapters in this important system.

This is the most modern and thorough of electrotherapeutic works and deserves a wide recognition.

JELLIFFE.

PATHOLOGIE EN THERAPIE DER NEURITIS, MYOSITIS, ZENUWGEZWELLEN, NEURALGIE EN MYALGIE. Door Dr. J. K. A. Wertheim Salomonson. Scheltema and Holkema's Boekhandel, Amsterdam.

This monograph of 345 pages is most excellent. It covers the ground completely and leaves the conviction that the author has worked on his

subject at first hand. It is fully illustrated and one here finds the valuable segment localizations worked out by Bolk and the Dutch school.

The work deserves translation into a better known language.

JELLIFFE.

LEERBOEK DER PSYCHIATRIE. Door Dr. G. Jelgersma, Professor te Leiden. Scheltema en Holkema's Boekhandel, Amsterdam.

This is a text book of psychiatry in three volumes of approximately 400 pages each. The first volume is devoted to general psychiatry; the second, in two parts, to special psychiatry. In large measure Kraepelin is the prototype for both parts.

The author's morphology is somewhat as follows: He divides all of the psychoses as intoxication and as germ or constitutional. Under the latter he places manic depressive, paranoia, hysteria, psychasthenia, and degenerative states. Under his intoxication psychoses, he arranges amentia, dementia præcox, general paresis, cerebral syphilis, acute intoxications. He also discusses the arteriosclerotic psychoses, senile dementia, psychoses of organic brain disease, thyroid psychoses, neurasthenia, epilepsy, idiocy and imbecility.

The general mode of handling the subject is didactic and the descriptions are clear and precise.

As a psychiatry it is well on a par with the best German works, although in its Dutch form it will suffer a restricted reading public outside of Holland. We would welcome it more in a better understood language.

JELLIFFE.

DIE BASEDOW'SCHEKRANKHEIT. Von Dr. Med. H. Sattler, A. o. Professor an der Universität Leipzig. Wilhelm Engelmann, Leipzig.

This is a monograph of 667 pages, the most extensive and thorough in any language. It is particularly rich in its review of the symptomatology and will serve as a reliable work of reference for many years both by reason of its scholarly completeness and its practical form.

A more extended review is not required, but special emphasis might be laid upon the author's firm grasp of the many anomalies of this disorder which anomalies or abortive types have been stumbling blocks in neurology for years. There is a bibliography of 3,200 references.

JELLIFFE.

HEREDITY IN RELATION TO EVOLUTION AND ANIMAL BREEDING. By William E. Castle, Professor of Zoology, Harvard University. D. Appleton, New York and London.

SOME NEGLECTED FACTORS IN EVOLUTION. An Essay in Constructive Biology. By Henry M. Bernard, M.A., Cantab., F.Z.S. Edited by MATILDA BERNARD. G. P. Putnam's Sons, New York and London.

These two works on heredity represent two modes of approach to this question daily becoming more important to students of nervous and mental disease.

Dr. Castle's small volume is based upon a series of eight lectures delivered before the Lowell Institute of Boston and on five lectures delivered at a graduate school in agriculture. It is a popular work and of the best kind of such. It is more or less strictly Mendelian and offers a clear and practical summary of Mendelian principles.

Bernard's work is of an entirely different nature. Starting his studies of heredity in tracing the crustacean phylum he later took up the problem of the evolution of the retina. During this work he was led to question the validity of the cell doctrine. As a result there issued his notion of the "protomitomic network" as a more elemental structure than the cell. Part One of his book deals with this protomitomic network. It consists of chromatin bodies and linin filaments. The gradual development of cells from these units is taken up in the latter part of his Part I, where a detailed account of the origin of nervous cells is given.

Herbert Spencer's Cosmic Rhythm is dealt with in detail in Part II. It is direct expansion, as it were, in this rhythm that carry organic life to higher levels. New species arise as special combinations of the protomitomic network and the author makes five stages leading up to that special colonization of cells and network which is called man.

The author's death left the work unfinished, but it has been edited by his wife, and as she writes in the preface she is responsible for the choice of the material which was in process of being arranged for book form.

Highly speculative, the work has great interest as a stimulus to viewing organic life in other than the more conventional ways. It is filled with references to zoölogical structures. To the worker in nervous tissues his chapters on the sensory organs will prove particularly interesting. The vertebrate eye is not, according to him, a brain structure originally; in fact all of the sensory organs are deduced from the original surface of the underlying network and its fringe. His description of the retina is very full, but it cannot be said that he was thoroughly acquainted with Cajal's important researches.

On the whole this is a pleasing and highly suggestive book with many unusual viewpoints which are valuable stimuli. As to their ultimate value no opinion can be given.

JELLIFFE.

PRAKTISCHE NEUROLOGIE FÜR ÄRZTE. Von Prof. Dr. M. Lewandowsky. Berlin, Verlag von Julius Springer, 1912. Pp. 300.

This work might well be described as a brief of neurology. It is a short discussion of the different subjects by a man who is exceptionally capable in this field. It deals with the more important factors in neurology in a concise and yet thoroughly scientific manner. It is a very useful work.

WHITE.

THE INTERNAL SECRETIONS AND THE PRINCIPLES OF MEDICINE. Charles E. de M. SAJOUS, M.D., LL.D. Vol. 2. Fourth Edition. F. A. Davis Company, Philadelphia.

The present volume of this interesting work contains about twenty chapters. The more striking of these chapters considers the Secretion of the Adrenals in Respiration; Adrenal Active Principle as the Ferment of Ferments; Adrenal Active Principle as the Dynamic Element of Life; The Pituitary Body as Governing Center of Vital Functions; The Internal Secretions in their Relations to Pharmacodynamics; The Internal Secretions in the Relations to Pathogenesis.

We have spoken of the first volume of this work. The industry of the author has placed the entire medical world under obligation to him for the

mass of material accumulated. Almost every opinion concerning the activities of the internal secretions has been here brought together.

The synthesis has been less critically performed and the reader will find, as the reviewer feels he finds, much opportunity for cautious weighing of the deductions drawn by Dr. Sajous. This is particularly noticeable in the rather fantastic assumptions relative to the nervous functions of the hypophysis. This is no drawback to a work of this kind which not only presents to the student a mass of observations from which the mind can construct those conclusions which seem warranted and be stimulated to the formulation of hypotheses which offer opportunity for grasping wider deductions.

Dr. Sajous has attempted some hypotheses which further researches have shown to have been unwarranted, but what work of any pretense has not shared the same fate.

JELLIFFE.

NERVÖSE ANGSTZUSTÄNDE UND IHRE BEHANDLUNG. Von Dr. Wilhelm Stekel. Wien. Zweite, vermehrte u. verbesserte Auflage. Urban & Schwarzenberg, Berlin & Wien; Rebman Company, New York. $4.25.

We have called attention to Steckel's Anxiety States when it appeared in its first edition. We find it an extremely useful book. While not prepared to accept the author's deductions implicitly,—nevertheless we are convinced there is more truth than error in these extremely brilliant pages.

He takes up anxiety neurosis and anxiety hysteria, with a general discussion of the general psychology of fear and the technic of psychotherapy.

Naturally the work is founded entirely on Freud's principles with a certain almost necromantic application. Stekel is a guesser if one will; but one apparently whose guesses are more nearly correct than a more painstaking technician's carefully worked out findings. For this reason he will prove a stumbling block for other "guessers" who lack the prophetic insight of the author.

JELLIFFE.

ARBEITER AUS DEM PATHOLOGISCHEN INSTITUT DER UNIVERSITÄT HELSINGFORS (Finland). Herausgegeben von Prof. Dr. E. A. Homén. Band iii, Heft 2–4. S. Karger, Berlin.

Two masterly studies render this present volume of paramount interest. Homén has an experimental study on tuberculosis of the peripheral nerves and connective tissue in sound and alcoholized animals and Dr. H. v. Ficandt writes a monographic presentation on the Pathogenesis and Histology of Experimental Meningeal and Brain Tuberculosis in Dogs.

Homén shows the mechanism which comes into operation in alcoholic animals whereby there is reduced resistance to the action of the tubercle bacillus. He gives an interesting story of the changes induced in the protective devices of the phagocytes, tracing them particularly in the peripheral nerves.

Ficandt's study occupies 300 or more pages, illustrated with many plates. It is difficult to recapitulate the facts here shown. The work must be read. Among other things he shows that the tuberculous cellular changes induced by the introduction of the bacillus arise not from a single source, hematogenic, nor from the histological elements of the brain, but from both sources.

In meningeal and intracerebral tubercles in dogs a varying composition of these cell elements is to be found. The chief elements found in meningeal tuberculosis are: (1) Finely granular leucocytes, (2) lymphoid cells, and (3) fibroblasts; while in intracerebral tuberculosis one finds (1) finely granular lymphocytes, (2) lymphoid cells, (3) glia cells, (4) fibroblasts. The fine granular leucocytes are similar in both conditions. They are among the earliest reactive cells, coming into the field of battle within a few days after infection. They soon degenerate and disappear, although they seem to have carried on an active warfare. Secondary leucocytic infiltrations are often found. In meningeal types the polyblastic lymphoid cells are soon in evidence—in the cerebral types they are fewer. Lymphocytes and plasma cells are also present, but seem to take a less active part in the struggle. The typical tubercle giant cells seem to arise from a confluent action of the polyblasts which develop much like large epithelial elements and are actively phagocytic. The fibroblasts commence their work after the leucocytes have disappeared; i. e., in 2–3 weeks after infection. They are actively phagocytic and also wall off the rest of the tissues. In the cerebral tissues the glia cells commence their phagocytic activity almost as fast as the leucocytes; i. e., in the earliest stages. An early tubercle of the brain is made up almost entirely of glia cells. They continue their protective activities for a comparatively long time; when undergoing degeneration their place is taken by the fibroblasts. Glial sclerosis is a typical protective reaction in cerebral tubercles.

This extremely valuable study is fundamental.

JELLIFFE.

DIE SPRACHE DES TRAUMES. Eine Darstellung des Symbolik und Deutung des Traumes in ihren Beziehungen zur kranken und gesunden Seele. Von Dr. Wilhelm Stekel. Pp. 539. Wiesbaden, Verlag von J. F. Bergmann, 1911.

This work is unique in the literature of dreams. The well-known Viennese author, from an experience which has included the study of no less than ten thousand dreams, has detailed in this book the results of the analysis of five hundred and ninety-four of this number. It goes without saying, of course, to those who are acquainted with the technique of dream analysis, that the results only are given except where further elaboration is needed to illustrate some particular point. It could not be otherwise, as even a book of this size could not pretend to do more with such an amount of material, and it is this very great wealth of material that constitutes its chief value.

The whole plan of the book is a classification of dreams according to what they treat of. There are a few general introductory chapters on the significance of symbolism, on dream distortion, on splitting of the personality in dreams, transformation and bisexuality, and then the following chapters take up a consideration of the significance of certain definite characteristics. These chapters deal with the significance of right and left, living and dying, speech, affects, the meaning of animals, plants, children and relatives, neologisms, and dreams within dreams. There are chapters on rescuing dreams, the different ways in which masturbation may figure in dreams, dreams of teeth, flying dreams, dreams of nurses, of water, fire, and pregnancy, birth and intra-uterine dreams, and dreams of children. Then follows a series of chapters on death symbolisms, then crime, resurrection and second death, number symbolism, biographic

dreams, the feeling of strangeness, stereotyped dreams, artificial dreams, and telepathic dreams. Towards the end there is a chapter on the first dream in a psychoanalysis, a chapter on dreamy states, hallucinations and hypnagogic visions, and an excellent chapter on the technique of dream analysis.

From the mere standpoint of empiricism a work that deals with the classified material of approximately six hundred dreams can not be other than very useful. A knowledge of the general ways in which dreams express their meaning, of what, as a rule, certain ways of expression signify must be of inestimable assistance to the psychoanalyst if it is tempered by the knowledge that any particular dream may depart from the general rule, and that the meaning must come from the patient and not be read into the dream by the analyst, facts that the author repeatedly emphasizes.

Another value of the book is the great amount of correlated evidence gathered from wide sources and largely incorporated in foot-notes. Here if one is disposed to be critical of a given interpretation, one finds the evidences of identical meanings in folk lore, superstitions, current slang, comparative philology and numerous references, and quotations together with examples of literary usages.

All this material has naturally been gathered in the author's wide experience in the treatment of the psychoneuroses so that in addition to a mere classification of the dream material there is interspersed at frequent intervals comments on the nature of the psychoneuroses, the character of neurotics, the methods of psychoanalysis, and frequent examples of common experiences in its application—comments that come fresh from the daily life of an active worker in the field.

Enough has been said to indicate that the book is literally full of suggestions for the active worker. The chapter on the first dream of the psychoanalysis is very suggestive while that on the technic of dream interpretation might well be translated. In this latter chapter he voices the importance of the personal equation of the analyst, the fact that the physician has complexes of his own which may obscure his vision unless he knows how to allow for them and thus produce what he very well calls a "psychoanalytic scotoma."

In view of certain criticisms that have been launched against the Freudian psychology in general and dream interpretation in particular, the chapter on artificial dreams will bear thoughtful perusal. These criticisms have been to the effect that because someone has made up a dream and then taken it to a psychoanalyst for interpretation and the psychoanalyst has attempted to point out some of its meanings that thereby the whole structure of dream interpretation is shown to be a structure wholly artificial and unscientific, easily lead astray, never sure of its ground because based upon fundamentally wrong premises.

The critic who comes to such conclusions from such evidence fails to see that in launching his criticism he is casting a boomerang and that his criticism in effect is that his own invention, the story that he made up to fool the psychoanalyst, has no meaning. Stekel actually analyzes many of these invented phantasies and shows the meanings behind them and indicates that they are quite as useful as real dreams as means of ingress to the mind. The fundamental principle involved has been expressed by the reviewer by saying that any given mental state of an individual can only be what it is because of all that has gone before and no mental state can be fully comprehended without a knowledge of that all. It makes

therefore no difference how that state originates, in sleeping or waking, it must have had its efficient causes that lie behind it and psychoanalysis is nothing but the uncovering of those causes. Man dreams not only when he is asleep and if dreams are the royal way to a knowledge of the psychoneuroses it is because they show mental processes in a nascent state that permits of their utilization by a clinical psychology as means for gaining access to and an understanding of the personality.

Another extremely interesting and suggestive feature of the book is the generalizations which the author arrives at from his material. It is refreshing too to note that these generalizations, whether we may agree with them or not, and whether they follow recognized Freudian formulæ or not (and they often do not), are the result of the author's own thinking and not the mere slavish restatement of the views of the master which, however true they may be, has again given material into the hands of the critics.

These generalizations are all worthy of careful study. He particularly lays stress upon the bipolarity of all psychic phenomena, a viewpoint that is especially interesting now since the formulation by Bleuler of his theory of ambivalency.[1] There follows from this that all sexual symbols are originally bisexual and that all neurotics psychically hermaphroditic, bisexuality playing an important part in their character.

Quite characteristic is the importance he gives to the idea of death. Every dream, he says, plays with the problem of death—there are no dreams behind which the spirit of death does not stand.

It is similar with his idea of the importance of criminality. All neurotics, he says, are criminals without the courage to commit crime. Here comes in the great significance of the religious complexes which are the negative of the criminal. All neurotics are repentant sinners and devout penitants. These conclusions go back to the fundamental infantilism of the neurotic. The child is wholly egotistic and is "universal criminal." Hate is the primary fundamental emotion. The family is the school of love and through learning to love the original hate is overcome and the altruistic, ethical emotions developed. Incestuous love receives its fixation through the consciousness of guilt and while it helps overcome hate it is itself born of hate. For the cure of a neurosis the knowledge of the "inner criminal" is unconditionally necessary.

This progression is interesting, particularly in comparison with the development of the libido as set forth by Freud,[2] beginning with the child as "polymorphous perverse" and becoming homosexual, passing through the family stage of love with the possibilities of fixation in narcisism and the final arriving at the normal heterosexual object love.

Enough of the author's views. It is but fair to state, however, that although he expresses them tersely he is not at all dogmatic. He has the profoundest regard for the possibilities of dream analysis and not the slightest idea that anywhere near all of its problems have been solved. For him the dream is a microcosm: The dream material but leading strings which can be followed back to the very origin of things mental and for a full understanding of a given dream it is often necessary to have a full understanding of the dreamer and all that that means in these days

[1] Bleuler: Schizophrenic Negativism. No. 11 of the Nervous and Mental Disease Monograph Series.

[2] Freud: Three Contributions to the Sexual Theory. No. 7 of the Nervous and Mental Disease Monograph Series.

of detailed mental analysis. It will be encouraging to some, who have found the work of dream interpretation tedious, to learn that one dream, for instance, was not understood until after sixteen months of study had supplied a sufficient knowledge of the individual to make its interpretation possible.

In conclusion the reviewer recommends the work as a most valuable contribution to modern psychopathology. The dream is given its proper setting and its due meed of importance as furnishing invaluable material with which to work for the kind of understanding of the patient's mental make-up that makes possible the application of rational psychotherapeutic procedures.

WHITE.

UNSOUNDNESS OF MIND. By T. S. Clouston, M.D., LL.D., F.R.S.E. E. P. Dutton & Company, New York.

The author has here in mind the general thesis that the lay public should be better informed about mental disorders. His work is in part a discharge of a duty which he with many another has felt the specialist owes to the community. Fully recognizing the greatness of the task Dr. Clouston has nevertheless issued this present volume.

It is admirable from the standpoint of its purpose, but less valuable for those interested in the general problem of psychiatry. Viewed from both viewpoints, however, it strikes us as lacking in something. If we are permitted to parallel the author's own chapter on the eleven orders of brain, we feel his class would be the "average book." Perhaps he wanted to write an average book for the average man. This "average man" who "is naturally conservative and wanting in initiative in the philosophical sense." So this book is, we believe, very conservative and lacking in that snap and initiative that would place it in another class—his class of the "marked talent" all around. If Dr. Clouston wrote it as an average book for the average man it is most admirable indeed—no matter what class was aimed at it will prove of value.

It is to be regretted that so much stress has been laid upon heredity and so little upon other factors. Heredity at best is such a hazy concept and Dr. Clouston has not clarified it a bit for the average man. True he gives some eleven excellent rules for mental hygiene, but fails to tell what is *good* and what is *bad* heredity and then says: "Nature's tendency is to destroy the unfit and hark back to the ideal" and "your patient is entitled to the benefit of the doubt." What doubt? That *his* children will be among those that nature will weed out for the benefit of the millennium or what? A whole lot of names in this chapter, but not a single family tree or objective demonstration as to how nature does weed out and on what principles; what are the real dangers, what the percentages, what the living have shown. Nothing but indefinite, hazy phrases. This is one of the reasons why we consider this an "average book" and also incidentally why the "average man" stays so. The teleological value of religion is not missed entirely; but for a popular book it would seem that a larger consideration could be given to the function of religious expression as one of the most important of all aids in keeping people useful beings.

The worst defect in this book, "written for the lay public," is that the subject of syphilis is not mentioned. It is not even in the index. This is characteristic English prudery. Influenza, fatigue and exhaustion,

insomnia, and the whole 107 causes are put down on pages 123–124. It tempts one to be put out to read these "causes" and syphilis is not put down in any of his 11,346 patients going over 35 years—and in Edinburgh. "Syphilitic poison" is carefully tucked away among the rest of the 107 causes. We have read that over 15 per cent of the population of the region about Edinburgh are syphilitic—call it 5 per cent. or 1 per cent., certainly 20–25 per cent. of the mental disorders which Dr. Clouston has treated have been due to syphilis.

It is entirely immaterial, the question of classifications so far as the lay public is concerned—but why treat the subject of classification in the flimsy superficial way it is treated. Why not show the classifications came to be, why they change and what psychiatry as a science has attempted. Instead of this we have a school boy essay in which the archaic viewpoint is maintained that there is only one mental disease, "Unsoundness of Mind." Imagine a book on disorders of the lung being written for the laity and called "Unsoundness of Breathing." This would go a long way in stamping out tuberculosis.

We refrain from further comment.

JELLIFFE.

ANORMALE KINDE. Von Dr. med. L. Scholz. Direktor der Provinzial Irren- und Idioten Anstalt in Kosten. Verlag von S. Karger.

This is a work of some 400 pages, written for educated people of all classes, who are interested in the problems of the defective classes, of juvenile delinquency, of nervous and difficult children. It may well serve as a useful guide to teachers not only in institutions where the more obvious derelicts are housed and fed and sometimes instructed, but will be invaluable for school teachers of all classes who would know more of types of abnormal children.

In brief the subjects discussed are as follows: The Boundary Lines of Mental Health, Constitution, Heredity and Degeneration, Etiology, Feeble-mindedness and its Varieties, Nervous Children, Hysteria, Epilepsy, Chorea, The Psychopaths, under which the following suggestive types are discussed—the indolent, depressed, manic, periodics, the emotional, the impulsive, the reckless, the distorted, phantastic liars, compulsives, moral deviates, sexually abnormals, disturbance at the time of puberty, suicide. These are the chapters dealing with the descriptive factors. Then follow chapters taking up the treatment. The questions of home or institution, physician or pedagogy, are entered into. Physical measures are thoroughly gone over. Complete discussion of training is given and an especially full consideration of social protection and care afforded.

The work is one of great merit and deserves wide reading as it deals with much clearness and understanding with a series of most vital and obstinate problems.

JELLIFFE.

TRAITÉ INTERNATIONAL DE PSYCHOLOGIE PATHOLOGIQUE. Directeur Dr. A. Marie. Tome Troisieme. Psychopathologie Appliquée. Felix Alcan, Paris.

This third volume on psychology applied to psychiatry terminates this interesting treatise. It opens with a discussion by Bianchi on the patho-

physiology of the sensory sphere. It contains little that is new and much that is untrue. Thus only to pick out the statement, that "the form of an hallucination is often of diagnostic importance," and the example, "that auditory hallucinations are found in persecutory paranoias." This at once reveals the nosological concepts of the author but does not tell us why he did not say that auditory hallucinations are also as significant in alcoholic hallucinosis, in dementia præcox, in many depressed manics, in hysterics, in almost anything, in fact, and that in general they have no diagnostic significance.

Mental morbidity from the psychological point of view by Sikorsky of Kieff is a 300 page essay. Here one meets with the old categories, will, intellect, emotions. In spite of this narrow viewpoint and a distinct over-indulgence in pedagogic finality the essay is of much practical value. One looks in vain for anything on the firing line of modern psychiatry.

Havelock Ellis and Carbis Water have a thoroughly readable chapter on Psychopathic Sexuality. It is purely descriptive however.

Comparative psychopathology is then taken up in four sections: A. Cullere gives a historical résumé, Marie writes on Ethnic Psychopathology, Marie and Bagenoff on Collective Psychopathology and Dexler on Animal Psychopathy.

Cullere's chapter on history is almost amusing by reason of the author's lack of grasp of the significance of the spirit of other times. It is as if one should judge the action of children in grown-up terms. Everything is judged from the narrow viewpoint of anecdotal psychiatry of about the vintage of 1880.

Turning to Ethnic Psychopathology one finds an extensive collection of facts on this general topic. They have not been correlated for in the statistical résumés a great variety of nosological schemes are noted without any attempt to bring them into accord.

Dexler has an extremely interesting chapter on mental disorders in lower animals.

A final chapter is on Etiology of Psychopathic Disturbances by A. Marie. It is needlessly full of irrelevant matter but is an excellent résumé. A few pages are given to psychoanalysis in this three volume work on psychiatry published in 1912. This fact among the many others is again indicative of its lack of originality and progressiveness.

JELLIFFE.

THE INSANITY LAW OF THE STATE OF NEW YORK. By Frank P. Hoffman, of Albany. Henry Stowell & Sons, Troy, N. Y.

This small volume contains an extremely valuable compilation of statutes relating to the insane and to institutions for their care and treatment, to which is appended copies of the official orders and regulations of the State Hospital Commission, as in its older form of the State Commission in Lunacy.

It would be a useful thing to have such a compilation for each and every state in the union.

JELLIFFE.

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Original Articles

TEMPORARY PARALYSIS OF THE RIGHT VOCAL CORD WITH SENSORY DISTURBANCE ON THE LEFT SIDE OF THE BODY[1]

By David I. Wolfstein, M.D.

CINCINNATI, OHIO

The report of this case is of some interest in that it presented the following symptom-complex:

(*a*) Transitory paralysis of the right vocal cord.

(*b*) Marked disturbance in swallowing at first complete and disappearing in the course of two weeks.

(*c*) A crossed dissociated sensory impairment involving the pain and thermic elements without implication of tactile and muscle sense. Pressure sense was not tested. There was no loss of localization; and stereognosis was intact. Further points of interest were:

(*d*) As already intimated the rapid onset and rapid subsidence of the symptoms.

(*e*) The apparently strictly circumscribed character of the lesion.

(*f*) The absence of any sensory impairment in the distribution of the fifth nerve on either side, even the first branch showing no involvement.

The history of the case in brief is as follows:

[1] Read at the meeeting of the American Neurological Association, May 30, 31 and June 1.

Case Report

Couldn't swallow. There is slight hoarseness.

Family History.—Negative.

Personal History.—Had diseases of childhood, including scarlet fever at age of two years. Has been fairly well during life since childhood. Had gonorrhea two years ago. Had one hard chancre seven years ago. Took treatment for this, he said, for four years; has never noticed any secondaries or other syphilitic manifestations. Took proto-iodide for four years, off and on. Uses alcohol and tobacco.

November 17.—Onset. On the Saturday eve previous (November 13) he drank much and smoked to excess, also chewed considerable tobacco. Says he was absolutely as usual until Tuesday afternoon when he first noticed he could not swallow. Came to the hospital Wednesday afternoon, November 17, 1909.

Examination.—A well-developed adult male. Temperature normal. Pulse 88. Respiration normal. Head: Pupils show the *left* to be somewhat larger than the right. *Left* palpebral fissure is larger than the right. Corneal reflexes are present and normal on both sides. Ocular movements intact. Light reflexes positive, prompt. Fundi oculorum normal. No disturbance in visual fields. Facial muscles are normal. Seventh nerve intact.

November 17. Patient cannot swallow. Fluids regurgitate. Not even liquids can pass. Says he noticed yesterday that it was impossible for him to swallow. Was advised to come to the hospital at once.

Examination by me of the larynx shows a distinct paralysis of the right vocal cord. Both cords meet in center by "A" phonation, for "E" there seems perfect coaptation. Right vocal cord seems to remain stationary in the middle line and there is a certain tremulousness as if there were a difference in innervation so that its position cannot be held steadily. Compared with the left cord it is distinctly immovable. There is no marked hoarseness, perhaps due to a compensatory over-coaptation of the healthy left cord.

Mouth: The uvula is deflected towards the right, and the soft palatal arch (velum palati) is higher on the left than on the right side. Sensation in the mouth and also on the soft palate is intact, but the palatal reflexes are absent on both sides. The uvula is not lifted, or the arch deflected.

Speech: No disturbance in speech, the tongue movements are normal, and it is protruded promptly and without deviation.

Nasal mucous membrane reflexes are intact.

Hearing is intact. No dizziness or vertigo complained of.

Chest well developed and symmetrical. Breath sounds normal. Heart rapid; accentuation of both first and second aortic sound at apex, accentuation of the second aortic sound at

the base. No enlargement of cardiac area. No murmurs. Abdomen: Nothing abnormal.

Gastro-intestinal: Individual cannot swallow. Upon attempting to pass stomach tube find spastic contraction at the beginning of the esophagus. Smaller tube can be passed, except on one occasion when rectal feeding was resorted to.

Bowels are normal. Extremities: No paralysis. Pulse fair but rapid.

Mind.—Individual bright and no mental disturbances.

Sensation.—Entire left side below jaw line shows loss of pain sense—also loss of ability to distinguish between heat and cold, hot being invariably called cold. Tactile sense still preserved on the left side, *i. e.,* can distinguish the slightest touch. Stereognosis on both sides is normal. Right side-sensation normal. Motion; no paralysis. No difference in strength on either side and no ataxia of limbs. All tests are carried out correctly. Patient can stand without swaying. No Romberg. No ataxia in bed. Reflexes normal on both sides except patellar is slightly exaggerated on both sides. No Babinski, or Oppenheim, or ankle clonus.

November 19. *Left* side. Sensation below the line of the jaw including the neck and the thorax and shoulders, down the body, upper and lower extremities, rather sharply delimited by the midline, there is a loss of sensation. This includes also the left half of the scrotum and penis. This sensory loss is for the pain sense and throughout this entire area wherever the pain sense is destroyed there is also loss of ability to distinguish between heat and cold. Hot is not distinguished but is *invariably called cold.* The tactile sense is still preserved; patient can always distinguish the finest tactile impressions. Stereognosis is intact on both sides. There is no loss of position sense.

Right side: From the *vertex to the sole* there is no disturbance whatever of any quality of sensation. There is no incoördination of movement, no staggering, or any ataxia. No nystagmus. Patient did not complain of any pain. There is no subjective disturbance of sensation.

November 20. Examination: Larynx as before. Hoarseness has disappeared. There is still some difficulty in swallowing, but fluids can now be taken. Sensation: Pain sense is still blunted on the left side, but only from about the third rib downward, but is not as marked as yesterday. Patient makes following observation: "I cannot understand why it is that I have perfect control over the left side, can use left leg as well as the right and feel everything, yet my left leg feels different; if heat or cold is applied it takes me longer to tell the difference and even with a pin point it always feels blunter than on the right side."

Note.—Although patient sometimes jumps when stuck with equal intensity on the left as on the right he himself says, "I

jump, but I do not feel the pain." Often he calls the pin prick hot.

Still no palatal reflex, but sensation in the mouth is intact. The head, neck and scalp on both sides and entire right side are normal as regards sensation. On the left side the area from the jaw line to about the third rib is now normal as regards sensation. Heat and cold are recognized. Pain is felt.

November 23. Left side: Areas of skin where pain sense is retarded, others where lost, and others where pain is somewhat exaggerated.

December 2. Patient has had eight injections of bichloride. Areas of anesthesia clearing up. Paralysis of pharynx and esophagus and vocal cord has disappeared entirely. No hoarseness. Swallows solids and fluids perfectly. The pupils are equal and there is no difference in the palpebral fissures.

December 8. Patient insisted on his discharge and feels quite normal.

"The fact that this case recovered so quickly and the additional fact that because of this rapid recovery the patient left the hospital robs the case of that completeness which it could otherwise have. Furthermore, the patient left the city, so that I was not able to follow up any remaining symptoms, if such there were." Fortunately since writing the above, I saw him on May 12 of this year and was able to confirm, not only my original findings, but to establish that at present patient is absolutely normal in every respect. He tells me that after leaving the hospital he took a thorough course of specific treatment at Hot Springs, Ark., and that he has continued the mercurial treatment at frequent intervals. He states positively that prior to the attack he had never had any headache—never had a headache in his life—never any staggering in bed or out. He did not know at the period of the onset that there was any sensory disturbance, "Until you tested me, then I could not tell hot from cold, but this only lasted for about ten days. I was in the hospital 20 days and had 12 injections. My hoarseness lasted three days and after a week I could swallow everything. On the day before I came to the hospital (Tuesday) I ate breakfast and dinner as usual. About two o'clock (P. M.) I felt a little sick and said I must lie down. I attempted to take some water, but could not swallow it and then tried to take a drink of whiskey. Both fluids nearly strangled me and came back through the nose. I was much frightened, all the more as I also became somewhat hoarse. The next morning I tried to eat breakfast but could not

do so. Then I was sent to the hospital by Dr. Langdon. Whilst there you had to feed me with the stomach tube, except once when the interne could not pass it and then I was fed by the rectum. I at no time had the slightest pain, neither then or since, nor did I ever feel dizziness or staggering. I was much worried about my eye and had the nurse give me the mirror. My left pupil and eye looked much larger than the right, but at the time of leaving the hospital there was no difference."

May 12. A careful examination by me shows absolutely no abnormality anywhere. I do not give details as I covered the ground completely as regards the larynx, the corneal and palatal reflexes and all motor and sensory tests.

N. B. Patient has worked steadily since his illness at his calling—nurse—and is now employed at Longview Hospital.

There can be no question that in this case there was a temporary, one-sided paralysis of the motor fibers of the larynx, although but little hoarseness was present, nor any disturbance in phonation. This perhaps is explained by a compensatory overcoaptation of the unimpaired left cord, which has been observed. The laryngoscopic examination showed a lack of movement of the right cord with a tremulousness and the characteristic picture of "Cadaver Stellung." No effort was made to test the sensibility of the interior of the larynx, but the notes clearly show that the sensibility of the buccal mucous membrane and over the uvula was not impaired. The uvula, however, was deflected towards the right and the soft palatal arch was higher on the left than on the right. The palatal reflexes were absent on both sides.

It is now generally admitted that the true motor nucleus for the vocal cords is the nucleus ambiguus. The axones from the motor cells of this nucleus pass dorsally making, like the facial, a knee-like turn near the solitary bundle and its neighboring solitary nucleus. After the turn the fibers make their exit from the medulla, traversing the substantia gelatinosa and the roots of the spinal quintus region. These fibers have been called by Kohnstamm (1) the intermediate fibers, intermediate because they lie between two other fiber bundles. There are therefore *three* fiber bundles belonging to the vago-glossopharyngeal neural apparatus which please permit me to briefly enumerate: (1st) the dorsally situated fiber bundle; (2d) the intermediary fiber bundle; (3d) the ventral fiber bundle.

First. The most dorsally situated are the entering centripetal fibers—receptory fibers—from the jugular and inferior ganglia of the X and the superior and petrous ganglia of the IX nerve. These fibers—true analoga both in function and situation of the spinal posterior roots—course in the tractus solitarius. According to Van Gehuchten the position occupied by the afferent vagus fibers in the solitary bundles is in its ventrolateral part, the afferent glosso-pharyngeal and the sensory facial fibers (portio-molle-geniculate ganglion) being situated dorsomedially to the vagal component.

There is a further analogy between these afferent fibers of the solitary bundle and those of the spinal quintus roots. The fibers of the former arborize around cells in the contiguous nucleus solitarius, just as the spinal fifth fibers terminate successively in the cells of the substantia gelatinosa. Axones arising from the cells in the solitary nucleus and from those of the substantia spongiosa form secondary neuron systems. These take a dorso-medial course before crossing over to join the opposite laqueus to end in the thalamus.

Kohnstamm and Wolfstein (2) believe that the secondary afferent neuron system of the vago-glosso-pharyngeal joins and courses upward with a similar system—the secondary trigeminal tract of Wallenberg.

The relationship between the solitary nucleus and the substantia spongiosa of the V nerve is so close that in all probability the two form a morphologic entity.

Physiologically Kohnstamm and Wolfstein (2) are inclined to believe that on account of this intimate relationship between the glosso-pharyngeal and the fifth receptory fibers this gray substance deserves the name of "taste center."

Second. The intermediary fibers. These arise in the nucleus ambiguus and, as said, course in a manner identical with the facial. It is now generally admitted that cells of the motor type such as are found in the ambiguus are part of a continuous cellular column analogous to anterior horn cells.

The cells of this column which lie furthest caudal give origin to the so-called spinal fibers of the accessorius.

N. B. The bulbar fibers of the spinal accessory which are analogous to the fine ventral fibers next to be described are nothing else than the most caudally situated ventral fibers of the vagus—"der accessorische Antheil des Vagus."

To sum up then, the most caudally situated motor cells of this cellular column give origin to the spinal (muscular) part of the XI. Following these frontally similar cells give origin to the laryngeal and esophageal fibers of the vagus. Still further frontalwards this cell group finds its morphologic continuation in the facial nucleus and the most frontally situated give origin to the masticatory fibers of the V—the nucleus masticatorius of Kohnstamm.

Lastly there is the third group of fibers which are of much finer caliber than the coarse intermediary fibers just described. These fibers take their origin in the dorsal nucleus of the vagus, or the dorsal vago-glosso-pharyngeal nucleus. These fibers which are centrifugal furnish the fibers for the involuntary musculature supplied by these two nerves.

It has already been said that the most caudal of these ventral fibers make up the "accessorischer Antheil" of the vagus. Then come the fibers of the vagus proper for the visceral organs supplied by this nerve and finally those of the IX which pass to smooth unstriped muscle.

The dorsal vago-glosso-pharyngeal nucleus must therefore be considered as not participating in any sensory function, nor has it any concern with the innervation of the larynx.

The true motor nucleus of the vagus is the ambiguus—the true sensory apparatus is the solitary tract and its neighboring nucleus solitarius, with its closely continguous dorsal gray substance immediately beneath the floor of the fourth ventricle.

In addition to the structures enumerated appertaining to the vago-glosso-pharyngeal mechanism there remains to be mentioned the nucleus para-solitarius situated slightly dorso-lateral to the solitary bundle. We regard these cells as being analogous to endogenous tract cells.

It is fairly conceded that the nucleus ambiguus is not only the center for laryngeal musculature, but also for the act of swallowing in so far as this act is voluntary and is capable of control from one side.

Kohnstamm (1) is also of the opinion that there is probably a crossed connection between the nucleus ambiguus and its apposed fellow as probably obtains in all cases where the function performed has a bilateral character.

At any rate acute one-sided bulbar lesions affecting the nucleus

ambiguus produce laryngeal paralysis on that side and may cause complete aphagia or marked dysphagia. This has been conceded by Müller, Spiller and others.

Before applying these anatomical facts to the analysis of the case in hand and before relying upon other established anatomical data to explain the remaining disturbances just a word as to the very apparent discrepancy in size of the solitary tract and nucleus in comparison with the much larger spinal quintus tract and its substantia gelatinosa.

We have advanced in explanation that whereas the fifth root tract must carry receptory impressions for *all* qualities of sensation for the head and face, the solitary tract and nucleus in the service of vago-glosso-pharyngeal sensibility must fulfil lesser requirements.

Quoting from Kohnstamm and Wolfstein (2) it is said "that the tractus solitarius contains *all* the receptory visceral fibers that enter in the vagus and glosso-pharyngeal. Its fibers appear very few in number when contrasted with the sensory trigeminal which supplies only the skin and mucous membrane of the head and face whilst the solitary bundle contains the sensory innervation of all the visceral organs in so far as this is not cared for by centripetal elements of the sympathetic.

This discrepancy is perhaps best explained by recalling that position sense is not required for the viscera, which sense alone must call for a strict isolation, and that furthermore according to Lennander the thermic sensory elements are practically wanting in the viscera. The organic needs demand from receptory visceral fibers principally reflex activities for which the mechanism of the solitary tract probably amply suffices.

Returning to my case, I have been much assisted in its elucidation by the articles of Müller (3), my friend Ernst Mai (4) and by the able contributions of Thomas and Spiller. Müller discusses cases of the class to which mine is related in connection with thrombosis of the vertebral—Thomas and notably Spiller in an exhaustive article in reference to plugging of the posterior inferior cerebellar artery. For the sufficient reason that in these papers numerous cases are critically analyzed I think it is useless to again detail their symptoms.

I have not been able to find in the literature any case so circumscribed and transitory as mine—though cases with recovery

are described. In many of the cases elsewhere cited the diagnosis and underlying pathologic condition have been verified by autopsy, and in several by careful microscopic study.

In most of these cases in which there was softening secondary to thrombus, or as in one or two instances perhaps to an embolus, the area involved was not only more extensive, but the ensuing destruction more permanent. The position of the lesion in the middle levels of the medulla varied. At times the lesions were so situated as to involve the structures in the immediate area of the nucleus ambiguus, and also important structures lying laterally and dorsally as far out as the periphery; in others laterally and ventrally. Medially situated structures such as the hypoglossal nuclei, the posterior and predorsal longitudinal bundles, and the lemnisci usually escaped; the vascularization and collateral supply for the medial areas being presumably richer, and better regulated.

In the first group of cases where the lesion involved an area in the neighborhood of the olive and the formatio reticularis and extended peripherally and dorso-laterally there was often an exceedingly rich and varied symptom-complex. There was usually an implication of the quintus apparatus with the remarkable syndrome of hemi-analgesia alternans, not present in this form in my case.

I shall not discuss here the ventral position in the tract of the spinal roots for the ophthalmic and second branch as related to the dorsal site of those for the third branch, nor the developmental conditions which explain this interesing location. It has served, however, to fully account for the frequent impairment of sensation of pain and of herpetic eruptions in the sensory area of the first and second trigeminal zones, and the freedom of the third zone, same-sided to the lesion. On the opposite side owing to the implication in the process of the ascending antero-lateral tract there was a dissociated sensory impairment usually from the lower neckline downwards.

In Wallenberg's (7) case and in others there was apparently an involvement of the secondary trigeminal tract, as shown by impaired sensation of the face cross-sided to the lesion in addition to that of the other body-half.

Very frequently, as was transitorily present in my case, the ascending sympathetic fibers, still uncrossed in the medulla, were

blocked so that the characteristic picture of a small pupil, narrow lid fissure and enophthalmus was noted always, of course, same-sided to the lesion. According to Kohnstamm (1) this may be due to a lesion of his higher coördination cells of the sympathetic in the formatio reticularis. These lie immediately medial to the spinal quintus roots. They belong to a system similar to that of Kohnstamm's nucleus salivatorius.

Often there was involvement of the corpus restiforme, of olivo-cerebellar fibers and in levels a little further frontal of the vestibular nucleus and the vestibulo-spinal tract, Deiters' nucleus (ataxia often marked, vertigo, homolateral weakness, falling of the head to the lesion side, etc.). If the lesion extended dorso-medially the vago-glossopharyngeal sensory apparatus was implicated with anesthesia of the pharynx and esophagus and attendant symptoms; as also perhaps cardiac and other symptoms where the visceral vagus nucleus was affected.

In the second group of cases cited by Müller, and Spiller in particular, the extension of the lesion was rather ventro-lateral and even towards the midline so that a cross-sided hemiparesis and sensory dissociation plus dysphagia, and a same-sided sympathetic paralysis with laryngeal paralysis was noted.

Finally both of these symptom-complexes may be combined. Spiller (6) has accurately pictured the symptom-complex where one posterior inferior cerebellar or the vertebral artery was plugged and, of course, it is far more complicated than in my case.

In my case vertigo, nausea, vomiting, ataxia, any kind of incoördination or homolateral weakness, pain, clumsiness of movement, sensory disturbance, falling of the head to the lesion side, auditory impairment, or hallucinations were not present. Neither was there any such an interesting sensory disturbance as in the case of Ernst Mai (4), viz.: loss of pain sense, loss of cold sense —cold called warm or hot—(warm retained) with an herpetic eruption in the area of the first and second trigeminal zones on the right side (lesion side); third trigeminal zone—chin and neck—normal on both sides, loss of pain and cold sense (warm retained) cross-sided to the lesion.

From the fact that in his case the thermic conduction for warmth was spared whilst cold was lost Mai reasoned that "although the fibers for pain, cold and heat must run closely asso-

ciated there must be some kind of differentiation." Unable to explain this on anatomical grounds such as distinct tracts with definite positions he finally concludes "that perhaps on account of some unknown structural or chemical difference there may be a difference in the resistance of the fiber tracts to certain toxic factors. However, in my case the sensory impairment cross-sided to the lesion was just the reverse of Mai's, viz.: cold *was* recognized and hot was invariably called cold. In mine as in his pain-sense was absent.

Based on Goldscheider's work "that after gradual compression of a peripheral nerve there is a loss of cold conduction coincident with which there is a hyperesthesia for warmth" Mai thinks that the same agent which paralyzes the cold fibers may irritate those for warmth. On this point I have no experience.

The fact that in one case cold is impaired, whilst in another, such as mine, it is heat that is lost would incline one rather to the view of some such antagonistic relationship or structural or chemical difference, than to that of anatomically distinct tracts. Regarding the symptoms of vertigo, nausea, vomiting, disturbances of taste and herpetic eruptions permit me to quote again from our previous paper (1) as follows:

"Where gray nuclear masses seem to coalesce without direct connection with long medullated tract systems a strict isolation between the two is absent and the possibility of an irradiation of stimuli from one to the other is afforded. Thus vagal stimuli of diverse origin from the lungs, esophagus, liver, external ear may be provocative of a tendency to cough. Similarly may perhaps be explained the changing relationship of vertigo, nausea, and vomiting due to vestibular tract irritation on the one hand, or to vagus irritation on the other by the intimate contiguity of the vestibular nucleus to the sensory vago-pharyngeal apparatus, especially in frontal levels of the medulla."

Furthermore from this close contiguity of the vago-pharyngeal sensory nuclei to the substantia gelatinosa of the fifth as seen in frontal levels we have surmised that abnormal visceral stimuli might by irradiation to the quintus area reflexly produce herpetic eruptions of the face or cornea.

Kohnstamm (1) is also of the opinion that the coalescence of the nucleus solitarius and dorsal vagus gray with the substantia gelatinosa as sections in far frontal levels seem to show

furnishes a simple solution of the controversy over the origin of the taste fibers. He says: "It is apparently a matter of chance how far dorso-medially taste fibers of the fifth may run. Whether such fibers course in the solitary tract, or in the quintus tract is a matter of individual variation. It may be observed in many normal sections that at the level of the glosso-pharyngeal entrance groups of transverse fiber-sections seem to bridge over between the spinal fifth roots and the fibers of the solitary tract."

In Wallenberg's well-known case degenerated neurons could be followed from the Gasserian ganglion into the sensory vago-glosso-pharyngeal nucleus. It would appear reasonable that these gray sensory nuclei form a morphologic and therefore probably a physiologic-functional entity.

In my case taste was "intact"; whether it was intact in the glosso-pharyngeal region, or not, I cannot say. I do not recall that the posterior third of the tongue was tested. My notes, however, do state distinctly that buccal, palatal and esophageal sensation (passing of the stomach tube) was intact—presumably the posterior taste fibers were also unimpaired.

There remains to be briefly considered in my case a few other points. First there is the sensory disturbance cross-sided to the lesion. The location of the antero-lateral ascending tract is about on a line with the nucleus ambiguus, but lateral to it and quite close to the periphery, also it is ventro-lateral to the trigeminal region. It is still, I think, a moot point whether the upward conducting path for pain and thermic impressions is a long tract or not, and furthermore, whether it is identical with the tract of Gowers. Lewandowsky (8) and others dispute both points, I think successfully, on anatomical and experimental grounds.

It is extremely doubtful whether there is any *long continuous* tract which, after entering the cord via the posterior roots, crosses to the opposite side and passes upwards in the antero-lateral tract to join the lemniscus on the way to the thalamus. Gowers' tract is not such a tract. It is a spino-cerebellar tract, its destination is without doubt the cerebellar cortex, and the only connection it can have with the cerebrum is by a second crossing to that thalamus which is on the same side as the primary neurons of Gowers' tract were in the start. The weight of evidence favors the view that upward conduction of pain and thermic impres-

sions is a crossed pathway, but that this pathway is not a continuous tract such as is Gowers' tract, but a series of short tracts—relay tracts. These short tracts after the initial crossing run from cells in one level of the cord-gray to cells at a higher level, from which spring new fiber tracts and so on successively (9).

Furthermore, it is maintained that Gowers' tract conducts its afferent impressions only to the cerebellum and the cerebellum has no concern with pain or thermic impressions. Mai and Kohnstamm are not dissuaded entirely by this contention.

Kohnstamm (1) divides the antero-lateral ascending tract as follows:

(*a*) Gowers' tract (sensu strictiori) ending in the cerebellum.

(*b*) Edinger's fibers, that is, neurons arising from the contralateral posterior horns which are passing cross-sided to their origin to the thalamus and corpora quadrigemina. The nucleus lateralis of the reticular formation appears to stand in relationship to this tract.

According to Lewandowsky (8) neither the degenerative method nor any other mode of investigation has disclosed the presence of any such ascending tract—certainly not in man. Nevertheless, cases such as mine and others do show that a block in this region of the formatio reticularis does interrupt pain and thermic impressions *originating cross-sided to the lesion.* Clinically, therefore, there is justification for the assumption that afferent pain and thermic stimuli pass through this region on their upward course to the sensorium. These impressions probably are transmitted along a series of short tract systems which elude our experimental methods and are not revealed by the study of secondary degenerations.

It is also urged by Mai and Kohnstamm and it appears to me quite correctly that the absence of pain, thermic and tactile disturbance in diseases of the cerebellum does not preclude the fact that such impressions nevertheless may reach the cerebellum along that portion of the ascending antero-lateral tract which sensu strictiori we call Gowers' spino-cerebellar tract.

The cortex cerebelli is considered as a coördinating and reflex center interposed between the cerebrum and the cord serving as an organ for the control of equilibrium and locomotion.

Sensory stimuli impulses passing upwards along the ascending

antero-lateral fibers if they reach the cerebrum are perceived as pain, thermic and tactile impressions. If similar stimuli reach the cerebellum they are not so perceived, but nevertheless, exert an influence upon the cerebellum in the direction of its specific function. In other words, Kohnstamm (1) believes that all receptory qualities reach the cerebellum, pain, tactile and thermic, as well as the other sensory components. In the cerebellum, however, all such afferent stimuli-receptors can only cause the cerebellum to react reflexly according to its functional nature.

Finally, as to the character of the lesion in my case: upon this one can only speculate. The man was syphilitic without doubt. There could not have been an embolus or thrombus of the posterior inferior cerebellar artery—the meager symptoms noted and their exceedingly short duration it seems to me is not consonant with this view. I do not know whether the artery gives off any small branch which supplies so limited an area—it is hardly probable. It appears to me that the only lesion which can account for the exceedingly circumscribed effect must have been a very small hemorrhagic focus which was rapidly absorbed.

1. Kohnstamm. Journal f. Psych. u. Neurol., Bd. VIII, 1907.
2. Idem. Journal f. Psych. u. Neurol., Bd. VIII, 1907.
3. Müller. Deutsche Zeitschr. für Nervenheilkunde.
4. Mai. Archiv. f. Psychiatrie, Bd. 33, 1904.
5. Thomas. Jour. of Nervous and Mental Disease, 1907.
6. Spiller. Idem, 1909.
7. Wallenberg. Anatomischer Anzeiger, 1896, Bd. 12.
8. Lewandowsky. Funktionen d. Central. Nervensystems.
9. Starr. Organic Diseases of Brain and Cord.

NOTE ON THE EXAMINATION OF THE CEREBRO-SPINAL FLUID FOR ARSENIC FOLLOWING THE ADMINISTRATION OF SALVARSAN[1]

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The extensive use of salvarsan in the treatment of syphilis and the widespread interest in its use has led to much literature on the subject but its therapeutic efficacy in syphilis of the nervous system and the parasyphilitic diseases such as tabes and paresis is, however, still a debated question. My own experience agrees with that of many other observers, Kleineberger et al., that while the general condition of the patient may be improved, the special symptoms of these diseases generally remain unaffected. I have been especially interested in the effects of salvarsan on the characteristic signs in the spinal fluid in these diseases, and again I have found no results from these injections. I am not unaware of the favorable reports of Canestrini (*Neurol. Centralblatt,* 1912, No. 1, S. 13) and Wechselman (*Berl. klin. Wochenschr.,* April 8, 1912, S. 688) and others, and also of the opposite effects reported by Ravaut (*Presse Méd.,* No. 18, 1912). My experience, which includes over one hundred cases of the intravenous injection, has not included any cases in which severe cerebrospinal symptoms followed, and were apparently caused by the salvarsan.

The point is raised by Sicard and Bloch (*Compt. rend. Soc. de Biol.,* Vol. 69, p. 624) that the quantity and mode of administration of the salvarsan, especially the latter, had much to do with the appearance of arsenic in the cerebrospinal fluid and, therefore, upon its effects on syphilitic diseases of the nervous system. They studied ten cases in all. In seven the salvarsan was given subcutaneously or intramuscularly and no arsenic was found in the spinal fluid. In three cases, .4 to .5 gm. was given intra-

[1] Read at the meeting of the American Neurological Association, May 30, 31 and June 1, 1912.

venously and definite traces were found in the fluid removed by lumbar puncture from one hour to one and one half hours after the injection. The amount in 5 c.c. equalled .02 to .03 of a milligramme as calculated by Dr. Ogier. He concluded that "the method of choice in treating syphilis of the nervous system is the intravenous injection."

Examinations of the spinal fluid for arsenic following the administration of salvarsan have not been frequently recorded in the literature and even in the few instances that are recorded, details as regards mode of administration and the method of examination for the arsenic have been absent or meager. The only series of cases other than Sicard's in which these examinations have been carried out is that of Ravaut (*loc. cit.*) in thirty cases of secondary syphilis. The lumbar puncture was done at varying intervals after the injection, the shortest being one month, the longest fourteen months. In twenty-seven cases, interval 1 to 14 months after injection and amount of salvarsan .6 to 1.8 gm., given in one to four injections, there was no trace of arsenic in the cerebrospinal fluid. In one case, .85 gm. injected, lumbar puncture, eleven months after, showed increased cell count, increased albumin, negative Wassermann in the spinal fluid and traces of arsenic. One case, 1.8 gm. injected in four doses, three months later lumbar puncture showed strong increased cell count, much albumin, positive Wassermann and traces of arsenic. One, injected 2.4 gm. in four doses, lumbar puncture one month later showed same findings as in the case preceding. One, injected with 2.40 gm. in four doses, lumbar puncture four months later showed normal amount of albumin, slight increase of cells, positive Wassermann and trace of arsenic; and another one, injected with 2.70 gm. in seven doses, and another 3 gm. in five doses, showed, on lumbar puncture, three months later, increased lymphocytes and albumin, positive Wassermann and traces of arsenic. Ravaut's work would show that, with the exception of one case, amounts less than 1.8 gm. or less than four injections of salvarsan did not show in the spinal fluid even a trace of arsenic one to fourteen months afterwards; but that larger amounts might cause a trace to appear in the spinal fluid, and that in these cases it was accompanied by changes in the spinal fluid, such as increased albumin, lymphocytosis and a positive Wassermann reaction, and accompanied also by such clinical

symptoms as headache, vertigo and optic neuritis. In all but one of the cases showing arsenic in the cerebrospinal fluid the patients had also been intensively treated with mercury.

The appearance of a meningo-encephalitis following the administration of salvarsan and accompanied by the appearance of arsenic in the cerebrospinal fluid has also been reported by Balzer and Condat (*Bull. de la Soc. Francais de Derm. et de Syph.*, January, 1912). The patient received two injections, .3 gm. a week apart. The symptoms began on the third day after the last injection and on the fifth day, the day of death, a lumbar puncture showed increased cell count, including polynuclear cells, strong albumin reaction, positive Wassermann, and "a certain quantity of arsenic." Other cases have been reported in which the injection of salvarsan was followed by the development of an acute fatal meningo-encephalitis, such as the one reported by D. J. McCarthy.

In studying the permeability of the choroid plexus to various substances, it has been determined that this permeability is increased by disease. Mestrezat and Ganjoux (*Comp. rend. Soc. de Biol.*, 66, p. 533) find the permeability to nitrates very small in health but much increased in meningitis, and consider this increased permeability diagnostic of the disease. It seems possible that the presence of arsenic in the spinal fluid in the cases reported by Ravaut and in that of Balzer and Condat and others of similar nature is due to the increased permeability brought about by the meningitis. The positive Wassermann reaction in the spinal fluid would be another evidence of this increased permeability, since the researches of Nonne and others have shown that the Wassermann reaction is absent from the spinal fluid, even if present in the blood, unless there is specific disease of the nervous system.

My investigations have been made with the object of discovering whether arsenic or salvarsan reaches the cerebrospinal fluid as ordinarily administered intravenously, and in what amount; and also whether the presence of cerebrospinal specific disease influenced this to any degree. My experiments were conducted on seventeen cases of syphilis, some with and some without involvement of the nervous system. In all cases .6 gm. of salvarsan in alkaline solution was injected intravenously in the arm, and the cerebrospinal fluid withdrawn by lumbar puncture in from fifteen

Tabulated Results of Examination of Spinal Fluid After Salvarsan

No.	Name	Clinic	Diagnosis	Wassermann on Blood	Spinal Fluid Before the Injection					Spinal Fluid After the Injection					Time After Injection	Arsenic
					Wass. Reac.	Lymph per c.mm.	Noguchi	Nonne-Apelt.	Pandy	Wass. Reac.	Lymph per c.mm.	Noguchi	Nonne-Apelt.	Pandy		
1	Wenl.	4,627	Tabes dorsalis	±	++		+	++	+	+	65	+	++	+	15 min.	None
2	Lofl.	Derm.	Tert. skin lesion	+++						−	2	−	−−	−	30 min.	None
3	Borg.	Derm.	"606" 3 mo. ago	−						−	3	−	−−	−	45 min.	None
4	Park.	Derm.	Skin lesions	++++						−	2	−	−−	−	50 min.	None
5	Bark.	4,567	Paresis	+	++	40	+	++	+	++	75	+	++	+	1 hour	None
6	Kenn.	4,613	Tabes dorsalis	−	++++	50	+	±+		++++	70	+	++	+	1 hour	None
7	John.	Derm.	Gland and skin	++						±	1	−	−−	−	1 hour, 15 min.	None
8	Ellis	4,662	Paresis	++++	++++	27	+	++	+	++++	28	+	++	+	1 hour, 25 min.	None
9	Culv.	Derm.	Sec. throat and skin	++						−	4	−	−−	−	1 hour, 30 min.	None
10	Foer.	Derm.	Chancre	+						−	1	−	−−	−	1 hour, 45 min.	None
11	Mumf.	4,373	Cerebral syph.	+	++	7	+	++	+	++	9	+	++	+	2 hours	None
12	Lado.	Derm.	Gumma epidy.	+						−	1	−	−−	−	3 hours	None
13	Vaje.	4,481	Bone syph.	++	−	1	−	−−	−	−	3	−	−−	−	5 hours	None
14	Powe.	Derm.	Sec. syph.	++++						−	2	−	−−	−	15 hours	Trace?
15	Peters	4,707	Paresis	++++	++++	45	+	++	+	++++	72	+	++	+	15 hours	None
16	Chal.	4,346	Spinal syph.	+	+	12	+	++	+	+	17	+	++	+	20 hours	None
17	Dall.	Derm.	Leg ulcer, syph.	+						−	2	−	−−	−	40 hours	None

minutes to forty hours. About 10 c.c. were used in Dr. V. C. Vaughan's laboratory in testing for arsenic, using both Reinsch's and Marsh's tests. In only one case (15 hr. interval) was there even the slightest trace of arsenic, and in that case the copper foil in the Reinsch test was discolored, but if it was due to arsenic the amount was too small to submit to further tests for its identity. In that case the patient had been treated by injections of mercury.

The accompanying table gives the details of these cases. It will be noted that it includes cases of syphilis of the nervous system, paresis and tabes as well as syphilis affecting other parts such as the bones, glands, skin, etc.; that in the cases of syphilis not showing clinical evidence of affecting the nervous system the spinal fluid was practically normal; and that the interval between the injection of salvarsan and the subsequent lumbar puncture varies from fifteen minutes to forty hours, several being made at just about one hour because of Sicard's observations.

I conclude that doses of salvarsan up to .6 gm., or perhaps more, given intravenously, do not ordinarily result in the presence of any arsenic in the spinal fluid, and that arsenic is present in the spinal fluid practically only when the dose is so large or so frequently repeated as to cause a meningo-encephalitis which is sometimes of a fatal character. The assumption that the introduction of salvarsan into the blood stream causes it to reach all parts of the body is, therefore, not borne out by observations. If, as Sicard suggests, the therapeutic activity of salvarsan on cerebrospinal syphilis may be gauged by the presence of arsenic in the cerebrospinal fluid, we have an adequate explanation for its failure to benefit most cases, since it may be assumed that salvarsan destroys the spirochete of syphilis but it can destroy them only by contact, so that if the so-called syphilitic meningeal affections are due to the presence of the spirochete they would not be reached by the spirillicide.

DEMENTIA PRÆCOX[1]

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The story of the evolution of the present concept of dementia præcox is one of the most interesting in the history of psychiatry. Beginning with the efforts by Kraepelin to establish nosologic entities it has been richly amplified by the more exact and rational formulation of functional mechanisms by Adolf Meyer and others. The change in the classification of the psychoses for which we are so much indebted to Kraepelin and his school is only a replica of that through which internal medicine passed within quite recent years. It is not so long since it was customary to group together under one head, for instance, all cases of dropsy. Today we realize that this is not a disease but only a symptom, prominent and striking it is true, capable of production by many diseases and functional disturbances. Structural changes in organs, or pathologic anatomy, are gradually beginning to take their proper position in relation to the disease picture. We are beginning to realize that while in many instances the anatomical lesion can be directly responsible for the development of the disease symptoms, yet on the other hand it may be the result of disorder of function brought about in some other way or may be entirely secondary to disease in some other part of the body. In pneumonia for instance the main symptoms and course are not due directly to the structural changes in the lung, for at the crisis when the symptoms disappear so rapidly the lung is still in a state of solidification. In order to obtain a grasp of any disease complex we must be able to state not only the facts as to the symptoms and pathologic anatomy but to trace the relations between the factors which led to the disturbance and the disease manifestations as a whole. The problem in other words is a biologic one.

The first step in rearranging our views upon mental disorders

[1] Read before the Chicago Medical Society, April 17, 1912.

must necessarily consist in a reconsideration of the various symptomatic groups with a view to determining if possible more fundamental bases for arranging our cases so that they shall come to represent disease entities rather than purely symptomatic pictures. This must necessarily result in the tearing down of older barriers and the establishment of new criteria for classification. Just as in the old group of dropsy some cases are now ranged under the head of renal disease, cardiac disease, various conditions leading to pressure on blood vessels, etc., so it becomes necessary to break up the old groups of mania, melancholia, paranoia, etc., and to rearrange the cases under headings which mean something more than merely prominent symptoms. In the doing there must arise considerable confusion and misconception, new terms must be established and new definitions laid down. Evolution so rapid that it might almost be called revolution has taken place in psychiatry in the last few years with the consequence that it becomes almost impossible to read the writings of any particular author without first becoming thoroughly acquainted with his method of expressing himself.

It is perhaps hardly necessary for me to point out that these changes are of vastly more than academic interest. Until we can definitely understand the nature of the disease in any given case it is obviously impossible to lay down any laws with regard to prophylaxis, rational treatment or prognosis. Such a possibility has already been achieved in regard to one particular group, general paralysis, and the problem of prophylaxis has now become a question of social organization.

Leaving out of consideration mental disorders such as those accompanying certain gross nerve lesions, the fever deliria, etc., we have an immense mass of cases often spoken of as functional psychoses. It is among these of necessity that the greatest changes are in progress. Many persons scoff at the term functional, seeming to regard it as implying the existence of supernatural factors. It is probably true that the term has covered, and still does cover, lack of knowledge in many instances, but that disturbances of function do occur without actual primary disease of organs can hardly be questioned. The word primary is here used purposely because there is also no doubt that the organ may become diseased and show definite changes in its structure as the result of disorder of its function. The kidney for instance will

undergo secondary changes as the result of being called upon to perform work to which it is not adapted, such as the excretion of sugar in large amount in diabetes. This must be even more true for an organ like the brain, whose principal duty is that of coördinating the different functions of the body with one another and the body as a whole with the conditions in its environment. Under the complex conditions of human life the brain must frequently be called upon to meet conditions for which it is unprepared and perhaps unfit. Leaving this question for the present we may review the steps which have led to the regrouping of those cases now called dementia præcox.

For generations it has been recognized that the picture presented by an insane person at any one moment may be replaced at the next by another which has the appearance of being totally dissimilar. This led to the study of the whole course of the disorder with a view to determining whether there were not some more fundamental features which were present all through. This was especially emphasized by Krafft-Ebing and has been faithfully caried out by his pupil Kraepelin. Many authors have attempted to separate from the great mass of symptom-pictures certain types which tend to end in a final stage of dementia, with the resulting formation of the groups of hebephrenia, katatonia, adolescent insanity, etc. But to Kraepelin belongs the credit of breaking entirely through the traditional lines of classification and the formation of a broader conception of the facts of observation. Arguing by analogy with general paralysis he contended that the final outcome must represent an indication of the essential nature of the disease underlying the very various symptom-pictures which result in this form of dementia. This line of argument is certainly open to very important objections, but we may let it stand for the present. As a consequence was formed the group of dementia præcox which we find to be defined by Kraepelin as containing "a series of disease-pictures whose common characteristic is the outcome in a peculiar state of weak-mindedness. It is true that apparently this unfavorable outcome need not occur without exception, but it is nevertheless so extremely frequent. . . ."

Starting then from a study of these end-states Kraepelin proceeded to analyze the various symptom pictures observed during the earlier phases of these disorders with a view to determining

whether there were any indications at such period of the presence of this peculiar form of dementia; since, obviously, if Kraepelin is correct in assuming that the final result represents the specific effect of the disease process, there must be some evidence of it all through the course of the disorder. The consequence of this study is the description of the manifestations of dementia præcox as we know it today. Whether or no one accepts these views *in toto* psychiatry owes to Kraepelin the inception of the biggest step forward that has yet been made and must honor him both for his courage in breaking through the time-honored fetters of symptomatic nomenclature and for the keen-sighted analysis of symptoms which has resulted in bringing into prominence features hitherto ignored or considered unimportant.

The one fundamental feature underlying all the various pictures which are presented by patients suffering from dementia præcox seems to be a disturbance in the emotional field of life which may best be expressed as disturbance of interest. By this one means that the individual is incapable of showing that interest in conditions and events which had been present in health. There seems to be as Kraepelin expresses it a "blocking" (Sperrung). Something seems to stand in the way of normal interest. One can readily understand that such interference must of necessity occasion marked disturbances in the coherence of the stream of thoughts which arise in consciousness and give rise to distortion of affective life and of the actions and conduct of the individual. It is interestedness which directs the trend of thoughts and renders continuous thinking and harmonious action possible. Let us lose interest and we know that at once our thoughts become scattered and we achieve nothing. In using this term interest I want especially to avoid any suggestion that I imply thereby any outside governing agent. Interest, unconscious it is true, is shown by the brainless frog when it carries out a series of highly complex movements accurately designed to achieve the purpose of removing the acid from its back. We may regard as interests those relations between the various organs of the body and between the body and the things of the outside world which are of importance for the preservation of self and species. Some of these are instinctive, that is to say inherent in all living matter, other conditions acquire interest during the life of the individual because they are found by per-

sonal experience to be important for the welfare of the individual and of the species. The greater the importance the greater the interest.

It must not be thought that this disturbance of interest is obvious in all or even in most cases. There are many conditions in which real or apparent loss of interest occurs with close resemblance to this peculiar distortion or blocking, and the conclusion that it exists in any given case often requires the most careful and painstaking observation with expert analysis of the whole situation, just as one deduces the presence of an infection with typhoid bacilli from the observation of particular signs and symptoms no one of which is characteristic. Among the features especially indicative of this state of "block," besides the indifference which may be more or less apparent, may be mentioned incoherence of thought, that is to say a lack of cohesion and connection in the sequence of thought (sudden inexplicable changes of direction, etc.); lack of harmony between thoughts as expressed in words and acts and the expression of emotion (laughing while relating bad news, etc.); the presence of contradictory emotional states in connection with one and the same group of ideas (the husband both loves and hates his wife (affective ambivalency of Bleuler)). It is impossible here to enter upon any more complete description, but one may say that some such evidence is constantly present although continued observation may be necessary in order to demonstrate, and no diagnosis is justified without, it. In his recent monograph Bleuler separates as fundamental (that is to say constant and peculiar to dementia præcox) features such as those given above from a further large group which he calls accessory symptoms. Under this heading come all the more prominent and striking manifestations which previously gave occasion for the symptomatic classifications and were generally responsible for the removal of a patient from his home surroundings to an institution. They include hallucinations and other sense falsifications, delusions, memory disturbances, bodily symptoms, katatonic features and the various acute syndromes. These are in part at any rate secondary to, that is to say the result of, the more fundamental change, but are not present in all cases, and to some extent may be found in other psychoses. They therefore cannot be regarded as peculiar to the disease process underlying dementia præcox. They are ex-

tremely variable in time of onset, duration and severity. Such a separation emphasizes the derivation from some more fundamental disturbance, but is to some extent artificial in that as explained above one really deduces the "blocking" of interest from the picture as a whole, and the mechanism which gives rise to these manifestations is the same as that causing the disturbances which are regarded as fundamental symptoms.

The group thus formed varies greatly in its breadth according to different authors. Kraepelin includes all cases originally classed as heboidophrenia (dementia simplex) of Kahlbaum, adolescent insanity of Clouston, katatonia and hebephrenia of Kahlbaum and Hecker, many of the cases originally classed under paranoia, some of those belonging to the older groups of amentia, mania, melancholia, as well as cases grouped under various etiologic titles such as masturbational, puerperal, etc., insanity.

Bleuler widens the concept even further and includes many individuals who never enter an institution for the insane but show merely a blunting and narrowing of interest, eccentric and peculiar personalities, etc., all amentia, chronic paranoia, alcoholic paranoia, dypsomania, etc. He claims that over 30 per cent. of all cases admitted to Burghölzli belong to this group.

Kraepelin divides the cases into three subgroups representing different varieties of clinical course. These are the hebephrenic, katatonic and paranoid forms. Bleuler and others describe a fourth, dementia (or schizophrenia) simplex, which is included with the hebephrenic form by Kraepelin and constitutes only a small proportion of those entering the hospitals. This group would be more common outside these institutions and is represented by a slowly progressive dementia without acute symptoms which may become stationary at any period of its course. Under this heading would come many of the failures in life, the tramp, the psychopath, etc. Others group the hebephrenic and katatonic together as one large class. All admit that these subdivisions are more or less artificial. Characteristic examples are easily assigned to one or the other but there are numerous transitions between the various forms which it is extremely difficult to place. One may therefore regard this subdivision as merely of practical and not essential value.

The vast majority of cases originate in persons under 25 years of age, but it is interesting to compare the views of Kraepelin

and Bleuler upon the cases arising in later life, the so-called Spätkatatonie. In the latest (eighth) edition of Kraepelin's textbook we find that he now classes under the head of presenile or involutional psychoses many of the cases which he previously included with the katatonic form of dementia præcox. Unfortunately the section of this book dealing with dementia præcox is not yet published, so that it is impossible to determine what effect the removal of these late katatonias will have upon his views as to the occurrence of this disorder in the later decades of life. Kraepelin states that the katatonic features shown in these cases are late in their time of onset and that he is unable to satisfy himself that the same mechanism underlies the disorder which we have given above as characteristic of dementia præcox. He also thinks that the final state of dementia which ensues is different in certain features from that of dementia præcox. Bleuler on the other hand includes not only these which are now separated by Kraepelin but also the one clinical type which in Kraepelin's seventh edition was given as a presenile psychosis characterized by certain delusions of derogation leading to dementia. Such facts as these indicate better than anything the state of flux which obtains in the outlining of these newer concepts.

It might at first sight appear as if such a concept containing superficially such different individualities but served to increase rather than to lessen the confusion in psychiatric nomenclature. If, however, one remembers that there are certain peculiar and apparently fundamental features throughout, no matter what the setting, one will readily appreciate that this step really means an advance. Hitherto, *i. e.,* before Kraepelin, it was necessary to change the grouping as the picture varied. A patient might today belong to the manic excitements, tomorrow to the amentia or confusion group, and again later to the agitated melancholias, and yet the final result be this more or less peculiar dementia. Time and study are still necessary before the boundaries can be clearly defined but there can be no question that the main features will persist.

Having advanced thus far there still remains the all-important question of the reason for these developments, the cause of this blocking and affective deterioration, and the manner in which are derived the various symptoms and syndromes. With regard to the first part of this question there are still great dif-

ferences of opinion. Kraepelin and many others upon the grounds of certain analogies hypothecate some intoxication, probably an autointoxication. Adolf Meyer and Jung especially insist upon the strictly mental factors as facts of definite concrete observation and show beyond question that in a large percentage of actual cases the disorder can be definitely traced in its evolution from faulty adjustments in individuals of peculiar makeup. Before discussing further the points in question it would probably be well to say something of what is meant by mental factors as causes of mental and bodily disorder. The problem is so large that I can give but the merest and most elementary suggestions as to its meaning.

I have already briefly indicated above the modern conception of the relation of mind to the adjustment of the organism as a whole. It was also pointed out that interest represented the relation with conditions of importance to the body in its struggle for existence and procreation. Corresponding to this interest are certain adjustments of the body representing states of preparedness to take advantage of the change in the environment which aroused the interest. Accompanying such adjustments are peculiar states of consciousness which we call "feelings" or affects. It is still a moot question whether the conscious state is primary or whether it merely represents the result of the bodily adjustment. According to this latter view promulgated independently though with some variation in detail by James and Lange, one might say that a man does not run away because he "feels" afraid but he "feels" afraid because he runs away. It seems probable that there is some truth in both views; that with regard to the more fundamental, instinctive interests the adjustment takes place reflexly and only then does the emotion appear, but it may be quite otherwise with the less deeply organized adjustments and their corresponding "feelings." However this may be, it is a fact that the conscious state and the adjustment of the body as a whole, which includes a state of activity not only in muscles but also in glands, are extremely closely related and cannot be separated. Pawlow for instance has shown conclusively that the secretion of gastric juice depends upon the "desire" for food more than upon anything else. One may therefore conclude that what we know as affective states of consciousness are inseparably related to an

adjustment of the whole body and that where one is present the other also exists. It is a matter of everyday knowledge that emotion has a powerful influence upon metabolism or as it would be better said the metabolic changes form a part of the state which in consciousness is called emotion.

Need one then be surprised that under the complex conditions of modern life difficulties of adjustment should arise? Especially is this true in relation to the reproductive functions which represent the strongest instincts of living matter, far outweighing even those of self-preservation and hence possessed of the greatest interest and highest affective coloring psychologically. The natural adjustment is impossible and the difficulties are increased for the young by the enforced ignorance (which is not and cannot be innocence), the faulty knowledge resulting from natural curiosity and accidental experiences, and the prudery and false modesty which are such common results of our present social and so-called moral training.

Difficulties in adjustment mean disturbances of the bodily mechanism as a whole and where long continued and of harmful character there must also be prolonged and harmful disturbance of mental activities. Such briefly is what is meant by mental factors. They postulate nothing which is not as "physical" as the strictest materialist could desire. It is not necessary nor intended to limit the difficulties to be faced to those connected with the reproductive sphere but these are so incomparably more important and have such wide connections with the activities of life (besides being subject to the strongest repression) that they must outweigh other problems to an enormous extent.

Meyer basing his views upon observations of actual cases sees the source of the "blocking" and other features in the formation of certain habits of adjustment in regard to difficulties whereby the individual, instead of squarely facing and grasping the problem as a stern reality and adopting a definite plan of action, hesitates and ruminates or proceeds to satisfy the desires which underly the difficulty much in the manner of a child playing a game, replacing the forbidden desires by some substitute which has in some accidental way become associated with it and so giving it the appearance of harmlessness. Such states of tension or phantastic day dreaming may absorb more or less the entire interest of the patient to the exclusion of all else. The

nature of the conflicts or wish fulfilments has not been grasped by the individual and consequently they remain shut in, not open to expression or correction. The absorption and inaccessibility thus arisen represent what we mean by "blocking."

Many authors, for instance Bleuler, refuse to accept this view that such mental factors are alone capable of giving rise to the disorders of mind and body grouped under the head of dementia præcox but yet are willing to concede, and anxious to prove, that they play the all-important part in the determination of the symptoms. I cannot here enter into these mechanisms but may mention that they depend upon the principles of dynamic psychology which have been so largely elaborated by Freud. "The Psychology of Dementia Præcox," by Jung, clearly and fully illustrates these mechanisms and opens up a path for the interpretation of many otherwise hopelessly inexplicable phenomena which cannot fail to materially aid in intelligently dealing with these patients.

If one considers the various views which have been propounded as to what, to quote Adolf Meyer, is "back of it" we find ourselves in a realm of pure hypothesis and speculation. It is true that in the various pictures of dementia præcox there are many features which closely resemble those which obtain in states of intoxication and one would be unwise to deny the possibility of such being present. But it should always be remembered that such intoxication may well be secondary to the disturbances in muscular and glandular activity which we recognize as part of the disorder in psychological adjustment. The attitude of intolerance which ignores the facts of observation of psychological difficulties with the orderly sequence of evolution of the disorder must be far more harmful to the development of a systematic scheme for handling this problem than any refusal to be led away from them by enticing theories, which if correct might permit the hope, at some future time, of a wholesale cure.

I cannot here go into the facts in any very great detail but may summarily mention a few of the arguments in question. In the first place the study of the brain post mortem has revealed certain changes which, although not constant, have roused considerable hopes that here, at last, we have something tangible. The changes which have been found involve the nerve tissue proper, leaving the supporting tissue and vessels practically free. Among them

are especially lipoid and protagonoid degenerations of the nerve cells with an overgrowth of the glia cells. Especial attention has been paid to certain ameboid cells which the recent researches of Alzheimer would tend to show serve the purpose of removing the various lipoid products of degeneration in the nerve cells and conveying them to the vessels where they are absorbed. Very similar changes are found in many other disorders and Meyer especially emphasizes their occurrence in Huntington's chorea, a disease belonging essentially to the heredo-degenerative conditions of the brain. Similar changes are also found in some of the intoxication disorders such as chronic tuberculosis (even without dementia præcox symptoms) and might thus lend some color to the intoxication theory. There is however nothing in the picture which suggests any disease process such as that which obtains in general paralysis and other disturbances of like kind. The clinical picture of dementia præcox also strongly negatives any conception of an actual destructive process; memories are not lost but only distorted and difficult to arouse; sudden astounding improvements occur at times in old standing dements as the result of acute infectious diseases which would speak strongly against any destructive lesion. Chemical analysis of the brain, in the able hands of the late Dr. Waldemar Koch, also revealed a disturbance in the relative proportions of the different combinations of sulphur. This is probably of a piece with the various lipoid and protagonoid changes found microscopically but the methods are still so gross that but little conclusion can be drawn from them.

Many of the clinical pictures during the acute stage closely resemble the intoxication deliria (similar pictures are also seen in hysteria); many of the bodily symptoms, the blood changes, cardio-vascular disturbances, trophic alterations in the skin and bones, gastrointestinal symptoms, increased myotatic irritability, etc., are common in intoxication disorders.

Studies of the balance of the various elements concerned in metabolism also show alterations involving especially the sulphur and possibly magnesium and calcium components but they are still too few and to some extent contradictory to permit of any definite assertions.

All these features unquestionably suggest changes in metab-

olism, the study of which will amply repay the time and labor expended. But there is yet to be found any evidence that they play any rôle in the actual causation of the disorder.

With regard to the nature of the supposed toxin we have a wealth of theories from which to select. Kraepelin suggests a disturbance of the internal secretion of the sexual glands, others have incriminated the thyroid and suprarenals. Still a further group would see the possibility of some infective toxin, such for instance as those of syphilis and tuberculosis. The percentage of cases in which a positive Wassermann test has been obtained is rather strikingly high. Noguchi in 135 patients found 12 per cent. positive. Roubinowitch and Levaditi found 3 cases positive in 15 examined. Such figures suggest the need for further study, but hardly justify a conclusion that syphilis is directly an etiologic factor. Stress has also been laid upon the frequency of dementia præcox in the descendants of general paralytics and tabetics. It may be that syphilis in the parents is a factor in the nervous insufficiency which everyone admits in those who suffer from dementia præcox. Alcoholism (in which Bleuler would see dementia præcox) is certainly much more frequent in the parentage, 26 per cent. according to Wolfsohn.

In concluding I would wish to emphasize, as has already repeatedly been done by Adolf Meyer and others, the practical importance of the functional interpretation of this group of disorders. In it lies a possibility for a rational attempt at prophylaxis. This is not a simple, easy task like that of vaccination, but embraces carefully considered problems of social organization. It is true that the type of personality which suffers from dementia præcox is not completely and clearly defined, but its broad outlines are known and should lead to careful consideration in training and selection of occupation for those in whom it is recognized. The inculcation of practical activity as opposed to abstract thinking is of the utmost importance and needs careful consideration in our schools, especially the elementary ones. Furthermore since so many of the difficulties which play a part in the evolution of the disorder belong to the reproductive sphere, more care and attention to instruction in these problems and the modes of meeting them should be universally provided. These questions are already being undertaken from other points of view but still far from as aggressively as they should be.

SOME ATYPICAL FORMS OF TABES AND PARESIS CONSIDERED IN THE LIGHT OF SERODIAGNOSIS[1]

By C. Eugene Riggs, A.M., M.D.

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The corroborative value of serodiagnostic methods in the study of irregular types of parasyphilitic disease is beyond question. Cerebrospinal syphilis and parasyphilis are basically different states. Mott makes this distinction very clear. When Crocq reports the cure of incipient tabes and early paresis it is nervous syphilis, not tabes or paresis, that is cured. Serodiagnosis should have prevented the confusion of these diseases, although there are very exceptional cases in which the differentiation is difficult to make. Every case of cerebrospinal syphilis, tabes or paresis should have a Wassermann made of both blood and spinal fluid, also a lymphocyte count and globulin test (the four clinical reactions of Nonne), since it is only in this way that the presence of syphilis may not be overlooked, and the different form of syphilogenous disease differentiated.

The following cases will best illustrate this:

Case I. Some five years ago E. consulted me for periodic attacks of nausea, vomiting, and pain, accompanied by great prostration, which would after a time cease and apparent restoration to health take place. Examination of both stomach and nervous system was negative; there was however a marked lymphocytosis. Evidently this was a case of tabes of which the gastric crises were the one and only symptom. This is in accord with Nonne's dictum that in parasyphilitic disease there is always more or less pleocytosis.

A propos of this case is one reported by Plaut of a woman alcoholic, 44 years of age, in whom there was inequality of the pupils with left-side immobility; patellar reflexes were normal. There were no other symptoms. There was no lymphocytosis but the spinal fluid gave a positive Wassermann. One year later a classical tabes had developed.

Case II. B., aged 50, Canadian, widower, merchant, two children living and well; wife had one miscarriage. Contracted

[1] Read before the American Neurological Association, May 30, 31 and June 1, 1912.

syphilis 12 years ago; six years later he greatly exhausted himself by rowing and a short time afterwards he felt tingling in the left little finger which spread to all the fingers. Occasionally there were shooting pains. One year later a similar condition developed in the right hand. For the past year there has been difficulty in writing and in buttoning his clothes. For four years there has been a loss of sexual power. No bladder disturbance. Shooting pains are sometimes felt in legs; no Argyll-Robertson pupil. Traumatic cataract of the left eye. Knee jerks normal, Achilles jerks absent, slight Rombergism and marked ataxia of both hands. Biernacki's sign present. There was a band of hyperesthesia in the distribution of the fifth cervical nerve of both arms. Pressure of the spinal fluid increased; Nonne-Apelt and Noguchi positive; very marked lymphocytosis; blood serum negative; spinal fluid gave a positive Wassermann. This reaction is not in accord with that usually occurring in tabes; however Plaut states "it would seem that in tabes as opposed to my findings in paresis, cases do occur which present a negative behavior of the serum."

CASE III. Mrs. W., aged 43, Swede, housewife, one miscarriage at third month, one child living and well. Has had migraine for the past fifteen years. Was operated upon for gall stones in 1910. Headaches have been very severe for the past two years; pain would last twelve hours, then nausea and vomiting would occur for from two to four days. At first these attacks were from three to four months apart, but now they come on every few weeks. During a seizure the patient is unable to void urine and has to be catheterized; she is much depressed at these times. With each migrainous attack there is associated a typical Raynaud syndrome which comes on with the vomiting. No Argyll-Robertson pupil, although the reaction to light is somewhat sluggish. Beginning atrophy in the left optic nerve, right normal; marked Romberg; no ataxia of upper extremities. Last year there were shooting pains in the legs. Deep and superficial reflexes normal; no sensory disturbances; blood pressure 100 mm. Hg., hemoglobin 91 per cent., red blood cells 4,600,000; albumin in urine but no casts. Increased pressure of spinal fluid; no lymphocytosis; Nonne-Apelt and Noguchi positive; blood serum gave a positive Wassermann, spinal fluid doubtful. The occurrence of the Raynaud syndrome is very unusual and I have never before seen it in tabes. Crocq reports a case seen by Babinski in an heredity syphilitic. Gaucher, Claude and Croissant refer to its occurrence in a young man some months after the appearance of the initial sore, and which was cured by antisyphilitic treatment.

CASE IV. H., 47 years, American, physician, excessive smoker; had typhoid in 1887; wife had one miscarriage, two healthy children. Contracted lues in 1898. Ten months ago first

felt soreness in the soles of both feet, which was most noticeable at night. Shortly after numbness developed in the toes and in the feet. There was also aching in the calves of both legs. Similar sensory disturbances then manifested themselves in both arms. No bladder trouble or loss of sexual power. He complained of vague pains in the masseter muscles. No Argyll-Robertson pupil, no ataxia, no Romberg. Knee jerks normal, Achilles jerks normal, sensation normal. Increased pressure of spinal fluid. Nonne-Apelt and Noguchi tests negative; no lymphocytosis. Wassermann in the cerebrospinal fluid positive, in blood serum negative.

The three characteristic tabetic symptoms are Argyll-Robertson pupil, loss of knee jerks and lightning pains. Strümpell states if two of these, especially if one be the Argyll-Robertson pupil, be present the case is very probably tabes. In my four cases the Argyll-Robertson pupil was absent in all, the knee jerks were normal in all, the lightning pains were present in two cases. In case one there was one symptom only, gastric disturbance; in case two, momentary pains, slight Rombergism, Biernacki's sign, ataxia of the hands and hyperesthesia in the distribution of the fifth cervical nerve in both arms. In case three there were sluggish pupils, beginning atrophy of the optic nerve, shooting pains in legs and Rombergism. In only two of these patients was a history of syphilis elicited. The absence of the knee jerk is one of the most constant symptoms of tabes (95 per cent. of the cases, Erb). We have all seen it present in the beginning of the disease and then disappear sometimes following an attack of lightning pains; or one may be present and the other lost. This Mott regards as suggestive of tabo-paralysis. In rare cases it may be retained throughout the disease (Erb). The Achilles jerk was normal in three cases, absent in one. While this is usually lost before the knee jerk, occasionally the converse obtains. Erb regards its absence, especially its unilateral absence, just as important a symptom as that of the patellar reflex. In all of these patients the Argyll-Robertson pupil was wanting.

Does this phenomenon bear a definite relation to the tabetic syndrome? Erb says it is the earliest and most frequent symptom of tabes; Williamson that it is a very early sign and is found in two-thirds of the cases; Oppenheim that it ranks with the knee jerk, that frequently it is the first definite symptom, and that he

has observed cases where for ten or fifteen years it was the only objective sign; and Fisher, that he would hesitate to make a diagnosis of tabes or paresis if it were absent. On the other hand Babinski states that the Argyll-Roberston pupil is simply an indication that the central nervous system has been touched with syphilis. DeMassery believes that this symptom is neither pathognomonic nor constant in tabes. Siemerling found it present in only one per cent. of his 1639 cases of nervous syphilis, and Clark observed it in five patients out of sixty-nine suffering from this disease. According to Henderson it is present in 70 per cent. of all cases of tabes and paresis. Babinski has called attention to its association with lymphocytosis. The presence of the Argyll-Robertson pupil then has absolutely no differential diagnostic value, it simply indicates a prior luetic infection, and a majority of the patients so affected manifest, unfortunately, a distinct predilection to neuronic degeneration. In case three there was beginning atrophy of left optic nerve with lightning pains in the legs. In rare cases, as in this instance, optic atrophy may occur with normal knee jerks. It is an early symptom in 2 per cent. of the cases (Williamson). It is observed in from 10 to 15 per cent. of tabetics (Erb, Mott) and is frequently followed by tabo-paralysis. It may be the only symptom or it may be preceded by lightning pains, or it may be associated with these and loss of knee jerk. Generally the Argyll-Robertson pupil is present.

A study of the cytologic, biologic and globulin reactions in these 4 cases, and a comparison of the findings with the usual reactions occurring in tabes dorsalis is not without interest and is of much practical value. In case I there was only a cytologic examination, since at the time the brilliant researches of Wassermann and his co-workers were yet in the making. In case two and three and four lymphocytosis was positive once, negative twice; the globulin reaction was positive twice, negative once. A positive globulin reaction is more constant than the cellular increase in tabes and paresis, and it is entirely missing in lues when the latter is uncomplicated by lesions of the nervous system (Holzmann). The globulin reaction occurred with greater frequency in these cases. Both of these reactions are however constant factors in tabes.

The biologic reaction of the blood serum was negative twice, positive once; the cerebrospinal fluid, positive twice and doubtful

once. These findings are not only wanting in uniformity but also fail to accord with the types of reaction believed to be characteristic of tabes, viz., a positive reaction of blood serum and cerebrospinal fluid, with lymphocytosis and a positive globulin reaction, although according to Plaut the reacting substances are not as constantly present in the blood serum and cerebrospinal fluid as in paresis. On the other hand, Kaliski reports the blood serum to be positive in from 60 to 70 per cent., and the spinal fluid in from 10 to 20 per cent. of the cases; while Holzmann states that the blood serum is positive in 70 per cent., the globulin reaction in 95 per cent., and lymphocytosis in 90 per cent. of the cases. The spinal fluid (original method) is positive in from 5 to 10 per cent.; larger quantities of fluid in nearly 100 per cent. of the cases. Sometimes the biologic reaction in tabes, as in case two (blood serum negative, spinal fluid positive), corresponds to an atypical reaction which I have observed in cerebral lues. There seems to be a consensus of opinion among neurologists that lymphocytosis is an early and constant symptom of tabes (Strümpell, Erb, Oppenheim, Mott, Nonne). DeMassery says that he has known certain rare cases of tabes, at least in certain periods of their course, without lymphocytosis. The case of atypical paresis which I now report is sufficient for the purpose of this paper.

In this patient all of the four reactions which Nonne believes almost invariably indicate paresis were present. The clinical syndrome was in no manner distinctive of paresis but was rather suggestive of manic-depressive insanity; "that vile phrase" as one of the distinguished members of this society calls it.

G., male, American, aged 48, married, no nervous or psychopathic heredity; no previous mental breakdown. Became luetic at 28. He was an excessive smoker and drinker. Wife had one miscarriage; one child died of hydrocephalus, one living. Two months before consulting me he began to suffer from insomnia and periods of excitement and confusion during the night; rational in the daytime. He thought dead bodies were around him, heard people moving coffins in the basement, etc., speech thick, very irritable and unmanageable, confused and disoriented. There was no elation nor grandiose ideas. The neurological and physical examinations were negative. Hemoglobin 84 per cent. red blood cells 4,864,000, white cells 8,975; blood pressure 146 m.m.Hg. Urine normal, a positive Wassermann of both serum and spinal fluid; mild lymphocytosis; Nonne-Apelt test positive. He grew worse, became bedridden and apparently was rapidly

deteriorating; he was given mercurial inunctions with iodide and increasing doses of tuberculin after the method of von Wagner of the Vienna Psychiatric Clinic. After eight weeks, treatment was stopped and the patient was removed to a state hospital. Shortly after this he began to improve and at this writing is presumably well. The asylum superintendent said it was a manic-depressive case and not paresis. Some months after leaving the asylum I received a letter from the patient; it was clear, and free from any evidence of mental impairment, but the writing was very suggestive of paresis. Holzmann states that in a pathologic spinal fluid there is increased pressure, a positive globulin reaction and increased cell content; and if these three symptoms are present either in combination or singly we have to do with an organic disease of the nervous system, specific or non-specific. In the three tabetics and the one case of paresis there was increased pressure. Holzmann also says that aside from leprosy the spinal fluid reacts positively only in luetic cases. This reaction was doubtful in only one of my cases and even this case was probably positive.

Conclusions

I. These cases are certainly anomalous in their findings and emphasize the necessity of testing for the four reactions of Nonne in every instance, for without this no examination can be regarded as final.

II. While probably in typical tabes the serologic response in a majority of cases is in accord with Plaut's findings (blood serum and spinal fluid positive), yet that such is not the fact in incipient cases is clearly shown by these irregular types, and Kaplan has demonstrated that even in uncomplicated cases "no hard and fast lines can be laid down" since in 2 out of 167 patients he obtained a negative result in every one of the "four-phase reactions."

III. The presence of Nonne's four reactions leads me to regard the last case as one of paresis notwithstanding the atypical clinical syndrome and the apparent recovery. The weight of evidence is certainly in favor of paresis.

IV. The cytologic, biologic and chemical findings are not, as Karpas well says, to be considered as the "ultimate court of appeals" for settling disputed diagnoses in doubtful or atypical cases; rather they should be used in conjunction with the clinical syndrome and regarded as corroborative only. Consideration of both these factors will enable one to arrive at a diagnosis in the great majority of instances.

Society Proceedings

NEW YORK NEUROLOGICAL SOCIETY

October 1, 1912

The President, Dr. L. Pierce Clark, in the Chair

SOME FEATURES OF THE GROSS ANATOMY OF THE SPINAL CORD AND NERVE ROOTS, AND THEIR BEARING ON THE SYMPTOMATOLOGY AND SURGICAL TREATMENT OF SPINAL DISEASE

By Charles A. Elsberg, M.D.

The speaker said that during the past year he had made a number of dissections of the human spinal cord, nerve roots and membranes, in order to study their arrangement and relations. He said it was well known that the anterior and posterior nerve roots perforated the dural sheath separately, with a thin septum of dura mater between them. In the cervical region the nerve bundles of the posterior roots remained separate until they had passed through the dura, having a fan-shaped arrangement. In the dorsal and lumbar regions, the arrangement was different, the separate bundles soon combining to form one bundle, which passed outwards to the dural opening as the posterior root. From this arrangement it was clear that a tumor of the cervical cord would, for a long time, make pressure only upon a few of the bundles which formed a posterior root. In the dorsal and lumbar regions the nerve bundles were united into one nerve near the cord, and a tumor in these regions would press upon the whole nerve root from the beginning. Clinical experience agreed with these anatomical facts: the earliest symptoms of pressure upon a cervical nerve root were usually confined to a small area of distribution—one or two fingers, for example—while in the dorsal or lumbar region the classical root symptoms extended over entire root areas. It was more exact, therefore, to speak of "root bundle" and of "root symptoms."

In speaking of the intradural and extradural course of the posterior nerve roots and its significance, Dr. Elsberg said that a careful dissection of the posterior nerve roots showed a very marked difference in their course at different levels. In the cervical and upper dorsal regions the nerve bundles united to form the posterior root, and passed out of the dural sac at almost a right angle to the cord. They then perforated the dura and entered the posterior ganglion. From the ganglion each root passed outwards with a slight inclination upwards. From the 8th cervical to the mid-dorsal region, the course of the posterior roots became changed. The root had an inclination downwards until it reached the dura; then it bent upwards at an angle just as it perforated the dura. In the mid-dorsal region, this angle was often very acute, from 40 to 45 degrees. Beyond the ganglion, each posterior root passed markedly upwards before it

divided into its anterior and posterior branches. In the lower dorsal and lumbar regions, the nerve roots passed downwards and outwards, and perforated the dura in the same directions; beyond the ganglia the direction remained unchanged until each root divided into its anterior and posterior branches. It was probable, the speaker thought, that the movements of the vertebral column, bending backwards and forwards, would increase an existing pressure upon any of the lower dorsal and lumbar posterior roots, as these could not yield as easily as the upper dorsal roots. Root symptoms in the lower dorsal and upper lumbar regions should become much intensified with forward and backward movements of the vertebral column. To a lesser degree, this must also be the case in the cervical region, although here the bundles of the posterior roots are spread over such a large area that all of them are seldom pressed upon at the same time.

Dr. Elsberg also referred to the relation of the ligamentum dentatum to the first lumbar root, and the surgical importance of this relation.

Dr. James J. Putnam, of Boston, said that the question suggested itself, in connection with Dr. Elsberg's highly interesting demonstration, whether the localized symptoms that had been referred to as arising sometimes from pressure on the cervical nerve roots were after all so completely due to the fact that those roots lay in separate bundles. There was a possibility, he thought, that no matter where the pressure was exerted, the evidences of it would be most apparent in the distribution of certain of the nerve roots. Amongst the cervical nerves, more than any others of spinal origin, we find varying degrees of susceptibility; for instance, the ulnar nerve suffers more than others, and the fact can frequently be demonstrated that certain functions of nerves are much more easily disturbed than certain other functions. This suggests that there may be a physiological reason for the different effects produced by pressure upon different portions of the cervical plexus or upon any given group of cervical nerve bundles, and it might, perhaps, help to explain why localized symptoms are more apt to be observed there than in other regions where similar injuries are sustained.

Dr. Joseph Fraenkel said he was particularly interested in Dr. Elsberg's presentation because some years ago he repeatedly named before this Society a condition encountered in studies of compression of the cord which he had then designated as "distant cord symptoms." The anatomic peculiarity which Dr. Elsberg described offered an explanation for this symptom, which consisted of evidences of irritation in the dorsal-lumbar part of the cord when the lesion was located in the cervical region.

Regarding the greater individualism of symptoms in lesions of the cervical cord in conjunction with the anatomic fact that the bundle formation in this part of the cord is more marked, Dr. Fraenkel thought that comparative anatomy might give some clue to the physiological reasons which Dr. Putnam mentioned. It is a known fact that the number of fibers emanating from the cervical enlargement of a horse is very much smaller than the number emanating from the cervical enlargement of man: this is in part due to the greater individualism and separation of the functions. It is, of course, also possible that certain fibers having a more specific function might perhaps show greater susceptibility to pressure.

The President, Dr. L. Pierce Clark, said that Dr. Elsberg's clear presentation of the relationship of the lower lumbar motor with those of the

posterior roots and the ease with which one might accidentally sever both in the operation of dorsal root section to relieve the spasticity of cerebral diplegia might account for the apparent return of spasticity in some of the cases reported, such as those mentioned by Gottstein and Kuttner. If this mishap occurred and this explanation of a return of the spasticity obtains, one is saved the necessity of trying to revoke the well nigh impregnable law that posterior roots once severed never regenerate.

In addition to the purely pressure symptoms concerned with spinal cord lesions mentioned by Dr. Elsberg, the possibility of other contributing factors, such as a localized meningitis, edema, etc., should not be lost sight of. Clinically, from a neurological standpoint at least, the syndrome would be less exact than the rather diagrammatic presentation shown in Dr. Elsberg's drawings.

PARTIAL ANALYSIS OF A CASE OF HYSTERIA OR DEMENTIA PRÆCOX

By W. C. Garvin, M.D.

The case was that of a young Hebrew girl, who at the time of her admission to the Manhattan State Hospital, in October, 1910, was fifteen years of age. In the analysis of the case it was ascertained that at the age of eight she met an Italian ice and coal peddler, about 40 years of age, who had a shop in a cellar. He enticed her there, fondled her genitals and attempted to have intercourse with her, but was unsuccessful. Later, he succeeded, and between the ages of eight and ten they had connection every other day. When she passed her urine, he fondled her genitals, and this gave her a pleasurable sensation. During his first attempt at intercourse she experienced considerable pain, felt weak, became dizzy and screamed. Between the ages of ten and fourteen she frequently visited him and states that at first she refused to have intercourse with him, whereupon he threatened to kill her, and she finally consented. At this time he also talked to her about the birth of babies and asked her to sleep with him. She admitted being fond of him because he was kind, gave her money and kissed and fondled her. She kept all these experiences to herself, acknowledged that she knew she had done wrong, but did not speak to her mother about it until the age of thirteen, but inasmuch as her mother became quite upset at the tale, she thought it best not to tell her the whole story.

From the facts presented, it would appear that the psychosis in this case had developed on a basis of sexual traumata, and the conflict between two wishes was apparent: first, to abandon her lover; second, to return to him. Of importance, also, was the feeling of shame of having done wrong, the fear of her mother, and, of late, apparently realizing her inability to extricate herself from her difficulties, a desire for death.

The clinical symptoms in this case, Dr. Garvin said, presented a rather complex picture, neither typical of hysteria nor dementia præcox. On the hysterical side we found restlessness, emotional instability, excitements, stupors, tonic spasms, amnesias, anesthesias, and a certain amount of the voluntary element. As opposed to hysteria, there was no suggestibility in the true sense, nor somnambulisms, paralyses, palsies, contractures, hyperesthesias, blindness, and no fixed ideas, with perhaps the possibility that

the statement that her lover would kill her might be regarded as such. Further, the complex was not repressed; it was all on the surface. Then again, in contra-distinction to hystericals, she was not benefited by any form of therapeutic treatment, and despite all efforts over a period of two years, her condition had gradually become more aggravated. Therapeutic efforts had been hampered by the patient's immaturity, her instability and inability to entertain a serious grasp on the situation.

Pointing to dementia præcox were the continuation of the hallucinations for over two years, the gradual diminution of the free intervals, the prolongation of the hallucinatory excitements, her resistance to therapeutic treatment, and, finally, a tendency to break down, to give up the struggle and seek refuge in suicide. Further, as pointing to dementia præcox, there was the element of wish-fulfilment, which seemed most dominant. She constantly saw her lover, heard his voice, etc. Against dementia præcox, we did not find the shut-in personality—all that was present was some lowering in the emotional and intellectual spheres, but inasmuch as the sexual experiences began as early as the age of eight, we could not positively exclude the sexual conflict as being the cause of her instability, lack of attention to her studies, the desire to divert her mind by indulging in pranks, etc., and thus avoid the fixation of attention, which all hystericals seek to avoid. Then again, while the conflict had evidently existed for a number of years, the hallucinatory condition appeared in full bloom rather suddenly; furthermore, the personality was still quite well preserved, and her interest in the external world remained fairly acute. There was no mannerism nor disorder in her stream of thought; no ideas of persecution and no delusions based upon the hallucinations. In all these respects the case was quite different from one of dementia præcox.

One might say, then, that the clinical features were: a personality perhaps somewhat defective in the emotional and intellectual spheres; a psychosis which developed upon the basis of sexual traumata, presenting a number of hysterical features, which, however, were not quite typical, and on account of the long duration, continued hallucinations, resistance to therapeutic treatment and a tendency to break down under the conflict, the prognosis was in doubt.

Dr. August Hoch agreed with Dr. Garvin that the case illustrated certain mechanisms very well. In regard to the diagnosis he believed that although hysterical states may deepen into dementia præcox states, and although transitions probably occur, this case was essentially on the side of hysteria, for this spoke not so much of individual symptoms as the reaction of the personality as a whole; on the one hand, her attitude towards the environment in which, so far as he could see, there was much coquettishness, rather natural liveliness, a fondness of praise and admiration, and on the other hand, and connected with it, the relationship of the personality as a whole to the symptoms, the latter being a very important principle in psychiatry. He pointed out that whenever this girl had very glaring erotic fancies, they occurred only in a state of a mental clouding, whereas in clear consciousness, only more superficial fancies occurred, Both of these traits form a marked contrast to dementia præcox; that is, the deteriorating states where the interest in the environment is markedly interfered with, and where the symptoms stand in the mind like foreign bodies. Of course there are chronic hysterias which, in spite of the fact that they do not recover, retain the characteristics of hysteria.

Dr. James J. Putnam said that no evidence had been adduced as to

this patient's intellectual ability before her trouble came on. From the general history of the case and from the appearance of the girl it had occurred to him that there might have been some mental deficiency before the onset of her present symptoms, and that we had to deal here with a hysteria developing in a person of inferior mental caliber—an imbecile of a high grade.

Dr. Putnam said that in trying to make a distinction between hysteria and dementia præcox, we were perhaps attempting to draw a line where no line could distinctly be drawn. In both of these conditions we had both the severe and the milder forms to deal with, and in a case of this kind one would rather hesitate to say positively whether it belonged to one category or the other. It should also be kept in mind that many cases of hysteria were really of a serious type, and as Dr. Hoch had said, some of them never recovered. Personally, he would be inclined to regard this case as one of hysteria in a person constitutionally unfit.

Dr. A. A. Brill said that he first saw this patient at the Mt. Sinai Hospital in 1910. At that time she was suffering from hysteria showing typical hysterical major attacks. He saw her again a few months later and found her in the same condition. Her mother stated that she was a terrible burden at home so that he suggested that the girl be transferred to the Manhattan State Hospital where she has remained ever since. His opinion of the case at that time was that it was one of hysteria occurring in a high grade imbecile.

Dr. Brill said that it was not surprising if this patient would not get well, because psychoanalysis was only effective in persons of normal mental condition. The patient must not only coöperate in the treatment but must have a perfect understanding of the psychological mechanisms at play.

As regards the diagnosis between dementia præcox and hysteria it is of course at times very difficult to form a distinct line of demarcation between these maladies. He recalled a case, which was also seen by Dr. Putnam, which for a long time was regarded as one of hysteria but which finally proved to be dementia præcox. The patient showed, however, the characteristic shut-in personality. In the case shown by Dr. Garvin there had been apparently no mental deterioration since the speaker first saw her two years ago, and he was therefore inclined to regard it as a case of hysteria in a defective individual of the imbecilic type.

Dr. M. J. Karpas, who had also previously seen the patient, said he regarded the case as one of constitutional deterioration with hysterical manifestations. He was inclined to doubt that much could be learned by psychoanalysis, as the patient was inferior intellectually, and could not be made to appreciate the significance of the method. He did not regard the case as one of dementia præcox: it lacked the earmarks of that disease.

Translations

DREAMS AND MYTHS. A STUDY IN RACE PSYCHOLOGY

By Dr. Karl Abraham

of Berlin

Translated by Dr. William A. White

superintendent of the government hospital for the insane, washington, d. c.

(*Continued from p. 766*)

Of the extremely varied functions of the ash in the myths and customs one especially is interesting to us. From the wood of the ash the pestle is made which is used in the preparation of butter. This wood protects against all kinds of witchcraft which it is believed one is especially exposed to by butter. According to present sources there can now be no doubt that the process of making butter is quite comparable to the preparation of fire by the act of generation and is set symbolically in its place, that further the product, the butter, is identified respectively with semen and also with the soma. A tale of the Mahabarata describes the origin of the soma as a process throughout analogous to the preparation of butter. I will give here Kuhn's[40] account greatly abbreviated. The gods desiring amrita (ambrosia) and the Asuras (bad demons) take the mountain Mandara as a butter stick in order to beat up the ocean with it. Indra laid the serpent Vasuki like a rope about the mountain and now the gods and Asura began to pull upon it. Out of the mouth of the pulled-upon serpent darted smoke and flame which formed into thick clouds which cast down lightning and rain upon the gods. At the same time, while the mountain was being whirled around, the trees standing together on its summit caught fire and the fire started in this way wrapped itself around the mountain like the

[40] Kuhn, "Die Herabkunft des Feuers," 1886, S. 219.

lightning does the dark clouds. The fire Indra put out with water from the clouds, and all of the juices of the great trees and plants flowed into the sea, and out of this water mixed with the most excellent juices, which curdles into butter, the soma rises up, which in this saga is identified with the moon, after it different other mythical beings, and finally Dhanvantari comes forth holding a white jug in which the amrita is found. The gods and Asuras contend for this and the former conquer.

The oldest Indian epics contain numerous other representations of the winning of the amrita. None of them speak against the signification of the soma assumed by me. Each of the three strata, which we have been able to establish in the saga, contain a wish-fulfillment, which is throughout analogous to that in the corresponding stratum of the Prometheus saga. As in that, procreation or the organ that serves that purpose, so in this the semen originally receives its apotheosis. As the result of repression of the sexual content of the saga the semen gradually becomes transformed into the nectar of the gods. It becomes the gift of a good god to man. The saga of the soma goes through the same transformation as the Prometheus saga and ends, like it, in an actual, not sexual wish-fulfillment.

XII

The Wish Theory of the Myth

I have tried, on the basis of psychological considerations, to give a theory of the origin of myths, and, through going into the analysis of examples, to lend it support. It is now time to discuss the relation of the views defended here to other mythological theories.

The oldest, and I believe the most popular theory today, assumes the myth to be the figurative expression of philosophico-religious ideas. According to generally diffused views such ideas lie, so to speak, at the foundation of the life of the human psyche. I cannot myself follow this view. As little as the child comes into the world with an altruistic ethics, quite as little is it to be assumed that man, in prehistoric times, bears within himself philosophical or religious ideas and that he symbolizes these, by way of supplement, in the myths. An uncommonly long process of repression was necessary before such an ethics came to occupy an assured position in the race and this process of repression must

be repeated in miniature again today by each individual. Our analysis of the Prometheus saga has shown that the single constituent which appeared as an ethical-religious idea—the view of Prometheus as a providential being—is of a quite subordinate, secondary nature, while ideas and wishes of quite another sort are found to be the true basis of the saga. As Freud has shown for the Œdipus saga, so I believe I have established for the Prometheus saga, that it has not taken its origin from ethical, religious, or philosophical considerations, but from the sexual phantasies of mankind. I conceive the ethical-religious constituents of the myth as later impressions, as products of repression. The other sagas also, which I could not go into so completely, appear to me to speak throughout in favor of this view.

Fifty years ago, when Kuhn founded comparative mythology, the young science broke with the old views of the origin of myths. For example Delbrück[41] brought, with special precision, the revolution of opinion to expression. He declares that every myth goes back to a natural intuition. The myth is a naïve effort at the explanation of natural phenomena. One credits myths now with an evolution and compares single sagas with the sagas of similar content of other peoples.

A modern theory traces back all myths of semitic and indogermanic races to a single source: to the contemplation of the constellations. The more recent advances have shown Babylonia to be the home of astronomy and that very many myths indicate a Babylonian origin. This is the so-called astral theory. A short work by Winckler[42] is useful for purposes of orientation in this theory.

If one takes a consideration of nature as the source of all myths, if one sees in them an expression of an astronomical view, such a theory is in this respect unsatisfactory. It gives us no perception of the motive in the myth formation. It takes no account of the egocentricity of all phantasy formations of mankind. Well may astronomical considerations have had a great influence on the outer forms of myths but their significance can only be secondary. In dreams also, observation of the outer

[41] Delbrück, "Die Entstehung des Mythus bei den indogermanischen Völkern," *Zeitschr. für Völkerpsychol. u. Sprachwissenschaft,* Bd. 3, 1865.

[42] Winckler, H., "Himmels- und Weltenbild der Babylonier als Grundlage der Weltanschauung und Mythologie aller Völker." In "Der alte Orient," Leipzig, 1902.

world made by the dreamer, enter as material; they appear, if one neglects a careful analysis, to constitute the essential content of the dream. He makes use of this material because he finds in it analogies to his "I"; it serves him for the symbolic veiling of his wish phantasies. The astronomical view serves the race to the same end. It projects its phantasies in the heavens. At the central point of its myths stands the race itself; it experiences in them the fulfilling of its wishes.

The wish theory of myths is amplified without difficulty to a wish theory of religion. The original identification of man with his god has become, in myths and in religion, indistinguishable. Through a long process of repression the monotheistic races have advanced to the position of subordinating themselves to their god as their creator. When gradually great revolutions have led to the consideration of a single god as the father of mankind—no longer in the sense of the procreative but of the caring-for father —so again there is contained therein a wish phantasy which has its roots in infancy. It is the same wish phantasy which Prometheus displayed in his love for the Greeks as "Forethought." Man wishes for a care-taking providence; he projects this wish in the heavens: there must dwell a care-taking father for all men. Quite as clearly the Madonna cult comes from a wish phantasy rooted in infancy. The caring-for mother, who is at the side of the child in all needs, the adult in the great needs of life will not dispense with. Therefore he carries over his retained childhood phantasy to the queen of heaven. A belief in the continuation of life after death is nothing but the fulfillment of a wish phantasy, whether it takes the form of another world in the Christian sense, or of a place of sensual delights in the sense of Islam.

With the help of the wish theory I have formulated an explanation of the origin and the changes of myths. It remains to add something about the disappearance of myths. That myths disappear is a sufficiently known fact which includes, for us, a new analogy with dreams. Every dream suffers regressive alterations whose tempo is sometimes quicker, sometimes slower. There takes place, however, no absolute forgetting, but the dream thoughts with their accompaniments return into the repression. So there comes a time when the race forgets its myths. Then there comes a time with each race, when it unburdens itself of traditions, when in place of the old structures of phantasy a tem-

perate manner of thinking appears. This development was furthered as well through advancing knowledge of the laws of nature as through the general situation of the race which satisfied its grandiose complex. In this retrogressive process the other structures of the phantasy of the race shared and not the least the symbolism of language. The sexual symbolism of language experienced hardly any more growth while the existing symbolism disappeared. The English language has "advanced" furthest in this regard—we might more properly say "receded." In it the sexual differentiations are, except for insignificant traces, obliterated. The linguistic and mythical symbolism are plainly inadequate forms of expression for the modern spirit of the race; especially is this so of the English. Practical results make wish phantasies unnecessary. A race proceeds otherwise when it is widely separated from the realization of the national grandiose complex. The example of the Jews is typical. They have preserved, through long periods of time, the wish phantasies from the childhood of the race. One thinks of the wish dream of the chosen people and of the promised land.

Modern natural science indicates by the designation "fundamental biogenetic law" the fact that the development of the individual represents a condensed repetition of the development of the species. In long periods of time phylogenesis has brought about gradually, in this way, many bodily alterations. The individual in its development must go through all such stages of evolution. Also in the psychic field things are brought about in individuals which phylogenetic development repeats. We have learned to know many phenomena in the mental life of the race and in that of the individual which are quite comparable to each other. The most important parallel for us, however, is this: The race, in prehistoric times, makes its wishes into structures of phantasy, which as myths reach over into the historical ages. In the same way the individual in his "prehistoric period" makes structures of phantasy out of his wishes which persist as dreams in the "historical" period. So is the myth a retained fragment from the infantile psychic life of the race and the dream is the myth of the individual.

XIII

The Determining Forces in the Psychic Life of the Individual and the Race

The analytic investigations, the principles of which are contained in the works of Freud, extend to phenomena of the normal and of the abnormal psychic life, of individual and race psychology. He has succeeded in proving, in all these territories, that every psychic phenomenon is determined by definite causes. The belief in inspiration no longer needs to be refuted. The defense must be turned in another direction. It is a widely spread, yes even scientifically maintained view, that in the province of the psychic chance governs. One refuses to acknowledge, for all of the thousand occurrences of daily life, for the passing fancies, the mistakes, forgettings, etc., for the content of dreams, for the individual expressions of mental disorder, a determination by special psychic factors. One persists in the old, dualistic standpoint. One assigns to psychic events a special position, removing them from the category of things determined by natural law. The view which ascribes psychological results to chance, is in so far throughout sterile, that it never can be reckoned on in the individual phenomena of the psychic life. Here come Freud's teachings. They look upon every psychic phenomenon as an effect and seek for its specific psychological cause. The determining forces in the psychic life are the object of its trend of investigation.

The child brings the fundamentals, as first determiners for his later psychological conduct, with him into the world. That side of this foundation which is of most importance for the explanation of all structures of phantasy, is the psycho-sexual constitution. This expresses itself unsophistically in childhood until the process of repression begins. While the child is preparing to transfer its inclination on to special living and lifeless objects and to draw it away from others, the influence of education, of the milieu, etc., impresses itself on it and constrains it to repress a portion of its natural feelings, and especially the sexual. Next, the inborn tendencies exercise a powerful determining influence on the repressed sexual infantilism. Infantile psychic material we meet anew in all the structures of phantasy. Reminiscences of later life are added as a third determinant. This also is met in great part in repression. Reminiscences, which are withdrawn

from spontaneous recollection, are considered mostly as not existing. Freud is the first one to have recognized the significance of repression and the determining effects of the repressed psychic material, and to have given it its full value in all its relations.

There are no accidents in the realm of the psychic. What outwardly appears as the result of accident has its deepest origin in the congenital equipment and the infantile sexual repression. The events after childhood are like tributaries which empty into this main stream. When we ascribe to the sexuality, among the determining forces, such a comprehensive significance, that in no way implies an overestimation of the sexual. Everywhere in organic life we find self-preservation subordinated to the higher principle of the preservation of the species. The impulse which serves species preservation must be the stronger; otherwise the race would perish.

The analytic researches, in the sense of Freud, are in bad odor today with the critics. They share this fate with a branch of language research—etymology. It was once said of this, that what characterized it was that vowels played no rôle in it and the consonants an insignificant rôle. An interpretation of words resting on scientific fundamentals has, however, carried the day; it bears rightly the name of a science of the "essential," that is of the true essence of the elements of speech. The Freudian teaching is an etymology of psychic phenomena. It also will finally establish itself, although it may be at the cost of many conflicts with prudery and the prejudices of modern science.

FINIS

(To be followed by a translation of F. Riklins: Fairy Tales and Myths.)

Periscope

Allgemeine Zeitschrift für Psychiatrie

(Vol. LXVIII, Heft 4)

1. Pathology of Delirium Acutum. A. D. Kozowsky.
2. Manic Depressive Psychosis and Hysteria. W. Heinicke.
3. Dementia Præcox and Chronic Hallucinatory Paranoia. G. Saiz.
4. Casuistics of Pseudologia Phantastica. E. Wendt.
5. Extension and Consolidation of Aid Associations. Klinke.

1. *The Pathology of Delirium Acutum.*—Two sets of opinions have prevailed with regard to acute delirium. It has been regarded on the one hand as a definite disease and on the other this has been denied. The author refers to an article published by him in 1899, next reviews the literature which has appeared on this subject since then, and finally describes a case observed by him in 1910. This case, that of a man of 40, began suddenly and terminated fatally in about three weeks. The clinical picture was one of great confusion, high degree of motor excitement and vivid hallucinations, corresponding closely to that of amentia. The anatomical examination showed two classes of changes, chronic and acute. The former consisted in hyaline degeneration of the vessels, pigmentary degeneration of the nerve cells, and neuroglia increase, brown atrophy of the liver, increase of connective tissue in the kidney and spleen. These changes the author thinks suggest a pellagrous origin. In addition to these the acute changes were an area of red hepatization in the lung, in the brain degeneration of nerve cells and nerve fibers, numerous hemorrhages, softening, and increase of the neuroglia cells. Meningococci were found in the lungs, but nowhere else. The author thinks the following conclusions justified: (1) Delirium acutum is a disease which can be called forth by different toxic agents; (2) it has no definite and characteristic pathological anatomy; (3) previous changes in the central nervous system may further the liability to delirium acutum by increasing the susceptibility to toxic agents; (4) in the production of acute delirium, there are active either (*a*) an increase in the action of the toxic agents which have set up existing chronic changes, or (*b*) the entrance into the organism of new poisons which tend to destroy the central nervous system.

2. *Manic Depressive Psychosis and Hysterical Insanity in the Same Patient.*—Report of the case of a 28-year-old servant girl, daughter of a drinker, herself a degenerate with criminal tendencies, who while a prisoner showed an irregular succession of psychical disturbances, now those of severe hysteria and again those of manic depressive insanity.

3. *Dementia Præcox and Chronic Hallucinatory Paranoia.*—Even Kraepelin himself is ready to admit that there have probably been included under dementia præcox a certain number of cases which may be found to fit better elsewhere. Particularly have some of the classes of cases placed by him under dementia paranoides been the subject of criticism. In a study of 200 women patients at the Triest Asylum the author found 88 in whom the diagnosis of dementia præcox had been made. Among these

were included all the paranoid forms, paranoia, in the Kraepelin sense, having only been diagnosed in one case. The 88 cases again were divided into 20 hebephrenics, 31 katatonics and 37 paranoid dements. The paranoid dements the author subdivides into two groups:

I. Those cases in which there are from the start senseless, unsystematized, contradictory and fantastic delusions and hallucinations, mainly without corresponding affective reaction.

II. Cases in which delusions and hallucinations dominate the picture, but the delusions are more systematized and, while to some extent fantastic, come more within the region of the possible and persist unchanged during long periods. In this second group belong those cases formerly called chronic hallucinatory paranoia, and still so denominated by many authors. Reclassifying on this basis he finds 13 cases of his dementia paranoides, Group II, all the others being placed together in one group denominated dementia præcox, Group I.

Studying the age at onset the author finds that the majority of cases begin, not about puberty, but in the quinquennium between 26 and 30 years, the dementia paranoides group II more frequently later, the cases increasing in number after the 36th year. While in time of onset it would seem to bear some relation to the climacteric, the author is inclined to connect it with the stress of various kinds so frequent at this period, rather than with the involutional process alone. It is noteworthy that among those affected, the number of widows and women living in unhappy family relations was considerable. In nearly all the cases the onset was slow and chronic. Hereditary predisposition was less frequently found than in the other dementia præcox cases. Remissions occurred in 12 per cent. of the cases of Group I, in none of those of Group II. Forty-four cases of Group I reached the end-stage of severe dementia, none of the Group II cases had reached this point. The remaining cases of Group I had what the author divides into "light" and "moderately severe" termination. In the lighter cases there was in general slight weakening of will and capacity to form judgments, impairment of the altruistic feeling-tone, slight schizophrenic disturbances of association and of mood or a certain incongruence between understanding, mood and will, the so-called intrapsychic ataxia. It is hardly warranted to speak of either an affective or an intellectual dementia in these cases. In the cases with "moderately severe" termination which have lasted more than ten years, we find chiefly paranoid conditions. In general these show abstraction of the thought process—so that it is difficult to carry on a conversation with the patient or to apply any of the usual intelligence tests—katatonic traits, impaired judgment, absence of the higher interests, reduction of the power of attention and of comprehension, besides which there is in many cases decided failure of memory, limitation of the play of emotions to entire indifference, senseless delusions and hallucinations, and paralysis of will power.

In Group II no case ended in deep dementia. Three fourths of the cases, however, ended in "moderately severe" conditions, in which either katatonic symptoms or confusion dominated the picture. In one quarter of the cases the termination was "light," namely, there was partial disintegration of the delusional system, dulling of the capacity to form judgments and of the altruistic feeling-tone and increased difficulty of comprehension. There was little difference between these forms and the "slight" and "moderately severe" forms of Group I. It readily appears that the

Group II of paranoid dementia presents a sufficient number of differences to entitle it to a somewhat special position.

Looking over his case histories the author concludes that its special characteristics are that during the earlier part of its course hallucinations dominate the scene, there is little or no impairment in either the intellectual or the affective sphere and the false ideas are purely the reaction to the sense deceptions which the patient long tries to harmonize with previous experiences, hence the explanatory delusions. Later, by the end of the first, or in the second year, the picture begins to change and indubitable signs of mental weakening appear. The difference hence between these and ordinary cases of dementia præcox is chiefly in the time at which signs of dementia appear, in the cases of Group I these being evident from the start. Are there any further cases which are midway between these Group II cases and true paranoia? The author thinks that he has observed two cases which could fairly be considered as intermediate and suggests that as we know that there are on the one hand cases which seem to show that the line separating dementia præcox from manic-depressive insanity is not an exact one but that there are cases intermediate between the two, so again we have reason to believe that through its paranoid forms and intermediate cases it may shade off into true paranoia on the other hand. This article gives a very careful and conscientious study of the subject and presents a number of further points which cannot be brought out in an abstract.

4. *Contribution to the Casuistics of Pseudologia Phantastica.*—Description of the case of a pathological liar and swindler. The author thinks that the psychological development of these cases occurs in general in the following way. Upon a basis of degenerative alteration, a wish or wish-complex develops. This grows strong enough to lead to autosuggestion—which is where the pathological begins—to which succeed as practical consequences, on the one hand, pseudologia phantastica, on the other swindling or criminality. Purely symptomatically pseudologia is characterized by the groundlessness of the confabulation, increased suggestibility and as a consequence double consciousness and imperfect reproductibility on the part of the patient. The condition of these patients often shows a periodical exacerbation.

5. *Extension and Consolidation of Aid Associations.*—Of local interest only.

(Vol. LXVIII, Heft 5)

1. Psychical Troubles in Frontal Lobe Tumors. M. Scrog.
2. Vascular Tension Phenomena in Dementia Præcox. Baller.
3. Diagnostic Association Experiments. E. Moravesik.
4. Homosexuality in German Code. O. Juliusberger.
5. Organization of Attendants. Buder.
6. Examination of Institution Children in Baden. E. Thoma.

1. *The Psychical Disturbances in Tumors of the Frontal Lobes.*—The author describes three cases of tumor in the right frontal lobe. The following symptoms were observed: In case 1, optic aphasia, stupor, drowsiness, emotional dullness, negativism, forgetfulness (hallucinations of hearing (?)). In case 2, dullness, stupid euphoria, disorientation for time and place, disturbances of attention, confabulation, hallucinations of sight. In case 3, a similar picture to case 2, with a peculiar facetiousness. Summing

up his findings the author concludes: There are no characteristic mental symptoms of disease of the frontal lobes, particularly the so-called tendency to give utterance to witticisms, as also the dullness and the Korsakoff's symptom-complex occasionally observed are to be considered rather general symptoms of increased brain pressure. The view that intelligence is located in the frontal lobes cannot be accepted, rather must the basis of the intellectual functions be considered to rest upon the harmonious working together of the whole brain cortex. Nevertheless it is not denied that the frontal lobe may play a special rôle in this activity, particularly as a coördination center.

2. *Vascular Tension in Dementia Præcox.*—The author studies the vasomotor disturbances, as cyanosis, localized edema, etc., observed in dementia præcox. He concludes that the vasomotor disturbances found in dementia præcox are tension phenomena in the muscular coats of the vessels analogous to the kataleptic phenomena observed in the body muscles, hence a specific symptom. They may have marked diagnostic value in doubtful cases.

3. *Diagnostic Association Investigations.*—The author presents in tabular form the results of his investigation of 99 cases as to their formation of associations. As stimuli he chose long words and sentences containing words usual in the phraseology respectively of exalted and of depressed patients and calculated to bring to light the emotional condition in which the patient was at the time of examination, also certain indifferent words and sentences unlikely to influence the emotional tone. The object of the experiment was explained to the subject and he was instructed to answer by the first word which came into his head as a sequence to the stimulus word. The answers were taken down in short hand—or written out.

The ages of the patients under investigation ranged from 15 to 80 years.

The author's investigations convince him that in certain cases association studies furnish a reagent for estimating pathological conditions, since the patients react to words and sentences which correspond to the basic emotional condition in adequate manner, while to stimuli carrying an emotional tone opposed to that actually present, their replies are disparate. For instance the melancholic accepts the stimulus word of the depressed group as correct, widening and deepening the content of ideas therein suggested, while for a stimulus word from the group suggesting exaltation he either replies with a word suggesting the contrary mood or rejects it altogether ("protesting reaction"). With the maniac on the other hand the reaction is exactly reversed. Both classes of patients in their answers to indifferent stimuli bring in their emotional ground tone, but not in as decided a manner as when replying to stimuli of definite tone. It was found that sentences were better adapted as stimuli than words, bringing out richer answers more characteristic of the ground tone. To stimulus words and sentences adapted to bringing out the emotional tone, the reaction occurs—in adequate mental condition—in the form of affirmation, as assenting expressions, as "echo association" (repetition of the stimulus word) with interpolated repetitions, as exclamations and expressive movements. In disparate emotional tone, protesting or negative associations are apt to follow or an expression or conceptional complex representing the contrary emotional ground tone follows. In the great majority of cases there were egocentric associations with the expression of different subjective phenomena easily understandable as a result of the stimuli of

the first and second group. The answers obtained either stand in relationship with the form and content of the stimulus word or not. The better balanced mentally an individual is, the more he tends to answer shortly, with single words, while where there is much mental weakness the opposite is the case and the emptiness of the mental content is evident. Sometimes the association is formed with only a part of the sentence. Especially is this observed in fatigue, in mental and motor unrest due to diminution or distraction of the attention, also in mental weakness due to imperfect perception and poverty of conceptions. Conditions of mental insufficiency and of mental weakness are characterized by echo-like, assenting or dissenting or empty reactions, showing on the one hand imperfection in the mental content, on the other rapid fatigue, the relation with the stimulus word being a loose one and the intellectual union being replaced by one of phonetic nature. Perseveration is found as well in these cases as in those of inhibition of high grade. Hysterical self-conceit, vanity and fickleness may also find expression and the emotional reaction is changeable, not deep enough. Indifferent emotional tone reacts in indifferent form in short sentences and words. Stimulus words and sentences are also able sometimes to bring out concealed hallucinations or delusions.

4. *Homosexuality in German Criminal Code.*—A criticism of the proposed new criminal code, which the writer finds unclear and unscientific as relates to matters homosexual. Chiefly of local interest.

5. *Organization of Attendants.*—It seems that the attendants in some of the German institutions have enrolled in a national union. The author discusses its ends and its possibilities and how it is likely to affect the relation of the employees to the management of the asylum. He concludes that superintendents will have to recognize organization of employees as one of the developments of the present time and that the safest attitude is one of benevolent neutrality with attempts as far as possible to influence its ends towards legitimate channels of activity.

6. *Children in Institutions in Baden.*—Examination of children committed to charitable institutions has shown a considerable percentage of individuals of abnormal mentality. On this account the Baden government has been considering the establishment of a psychiatric observation station in connection with a new institution and desiring to get an idea as to how many mentally defective children there were in the various charitable institutions of the kingdom, both public and private. Dr. Thoma was charged with an investigation as to the number of mentally defective needing special care From this number were excluded on the one hand such cases as evidently belonged in idiot, epileptic or insane asylums, and on the other those whose defect was so slight as not to unfit them for ordinary instruction. The time allowed for preparing a report being short, no extended examination of individual cases was possible. Much reliance was placed upon the answers received to a set of questions modeled upon the "Frankfurt Observation Sheets for Defective School Children," prepared by Laquer. These were sent around to the directors of the different institutions with a request that they be filled out. In cases personally examined the Sommer's scheme was in general followed. A physical examination was made in each case. Memory, attention and reproduction were tested and in a few cases association tests were carried out. In all 620 cases from 28 institutions were examined. From the results of his investigations the author thinks the following conclusions justified:

1. In the institutions for compulsory education there is a large per-

centage of defective children of whom the great majority can still get along with general instruction. A smaller proportion are unsuited to general instruction and must be separated. On this account the coöperation of psychiatrically educated physicians is necessary. This is to be accomplished not only by subjecting each child to a careful examination before admission, but the institutions must be subject to professional inspection from time to time.

2. The directors of institutions of this kind and teachers should be acquainted with the results of psychiatric inquiry, and with the experience gained by those engaged in special instruction of the defective. To this end lecture courses should be given from time to time. It would be advantageous for each teacher to have had experience in teaching in a special school.

3. For those defectives not belonging in epileptic, idiot or insane asylums, but who are sufficiently abnormal to need removal for a longer or shorter period to an institution for special instruction, a department under the direction of a physician educated in psychiatry should be provided.

In such a department, not only the above mentioned cases, but also those of doubtful mental condition and needing a more or less prolonged observation could be gathered. Such a department could be made a part of either an insane asylum or an educational asylum, which latter arrangement is what the Baden authorities had in mind.

4. In an institution for compulsory education, as much personal freedom as possible should be sought for. To make this possible a small detention place for very degenerate and defective children should be provided. To separate the easily taught and difficultly managed defectives and intelligent degenerates in separate institutions is less desirable.

5. Careful selection should be made of those to whose care and instruction these children are committed and the teacher should be informed in advance of the mental peculiarities of each defective committed to his charge.

6. From the psychiatric side the infliction of punishment upon the defective youth in curative and custodial institutions should be decidedly discouraged.

C. L. Allen (Los Angeles).

Book Reviews

THE PITUITARY BODY AND ITS DISORDERS. CLINICAL STATES PRODUCED BY DISORDERS OF THE HYPOPHYSIS CEREBRI. By Harvey Cushing, M.D., Associate Professor of Surgery Johns Hopkins University, Professor of Surgery (Elect), Harvard University. J. B. Lippincott Company, Philadelphia and London. $4.00.

An extended review of this very excellent work is superfluous. Dr. Cushing has admittedly been one of the foremost investigators of the hypophysis and has here presented in a most attractive form not only the results of his own extended researches, but also the findings of other observers. They have been woven together in a volume of unusual merit.

Rarely does one find in a monograph, for such this is, so rich and ideal a mixture of experimental, theoretical and surgically practical material. It is fascinating reading, one wants to read it almost at a sitting. Its completeness prevents such a rash intellectual banquet. One reading, however, urges to another. It is truly a work that fills every requirement and demands its place in the neurologist's and psychiatrist's equipment and his library.

JELLIFFE.

UEBER NEUROREZIDIVE NACH SALVARSAN UND NACH QUECKSILBERBEHANDLUNG. EIN BEITRAG ZUR LEHRE VON DER FRÜHSYPHILIS DES GEHIRNS. Von Dr. J. Benario. J. F Lehmanns Verlag, Munich. 6 marks.

Of the host of recent works on the treatment of syphilis of the nervous system, especially by salvarsan, this of Benario's stands out as the most complete and most reassuring. It deals preëminently with cerebral and medullary syphilis in its early stages. It shows in a very convincing way that the so-called accidents of salvarsan therapy are for the most part not due to the medication, but are acute advances of the disease syphilis itself. This is particularly true for acute blindness, acute deafness and similar cranial nerve implications. Such acute involvements were very well recognized by the early students of syphilography and the older classics of the sixteenth, seventeenth and eighteenth centuries bear witness to these appalling accidents, many of which have disappeared from observation by reason of the advances in treatment. Guarinoni, Horn, Lagneau, Lallemand and others contain indisputable records.

Benario analyzes most of the modern observations and brings them in line with the older studies in a comprehensive and practical manner. The evidence must be read to be appreciated.

JELLIFFE.

CHARACTER UND NERVOSTÄT. Von Dr. Jenö Kollarits, Privat Dozent an der medizinischen Fakultät in Budapest. Julius Springer, Berlin.

This work of 200 and some odd pages contains twelve lectures delivered by the author on the nature of character and of nervousness and the avoidance of nervousness.

He spends much time in telling that nervousness is not a disease but a more or less normal inherited character peculiarity, constituting in its severe grades an hereditary anomaly but not a necessary degeneration of the character.

These are all idle words, for after all the chief point is missed that disease is an arbitrary conception anyhow and he simply denies one hypothesis to create an equally arbitrary one. Then again he tells us that nervousness is a physico-chemically inherited character of the nervous system. The blue of violets and the red of the cockscomb are physico-chemical inherited characters in their respective organisms, but that does not explain cleistogamy in violets nor blanching of the cockscomb in the presence of danger, and to attribute nervousness to physico-chemical characters is elusive if not an illusion of scientific precision.

Why spend so much time in combating Morel's formula of degeneration when it, like other symbols, have served their usefulness and been relegated to the scrap heap of one time useful concepts.

Apart from these minor failures in methods of thinking, the work contains much of interest and of considerable value and is worth reading for his wide survey of many contemporary points of view, although it cannot be said that he has adequately summarized them, or at times understood them.

JELLIFFE.

THE YOUNG MALEFACTOR. A STUDY IN JUVENILE DELINQUENCY, ITS CAUSES AND ITS TREATMENT. By Thomas Travis, Ph.D. With an Introduction by the Hon. Ben B. Lindsay, Judge of the Denver Juvenile Court. Thomas Y. Crowell & Co., New York.

"The mistake has been"—Judge Lindsay is speaking of "Laws"—"that limitations have been put upon intelligence and therefore justice by a code designed merely to describe and regulate conduct, affording no play whatever for the use of that wisdom and discretion which only comes from a knowledge of men and those causes that make or unmake them. The result is our criminal law system is so stuffed with injustice that it is doubtful if its contributions to injustice have not been greater than to justice. I say unhesitatingly that it has been positively so in dealing with the juvenile offender. In the past we have been brutally ignorant upon the subject."

If this book contained nothing else than this short abstract from Judge Lindsay's Introduction it were welcome. It is thrice welcome and should be read by every doctor throughout this country. Justice is symbolically represented with blindfolded eyes—many have thought this meant no partiality—that it really means that the blindest thing in our community is its overburdened and unjust "legal machinery" is fortunately beginning to be appreciated.

This book, we further note, is written by a layman, a doctor of philosophy; some similar works have been written by doctors of medicine—a few by clergymen—but who ever saw one written by a lawyer, a judge, or by the very men whose business it is to understand?

This very class are, in our opinion, the most "brutally ignorant" of almost all of the problems of most importance to their profession and Judge Lindsay's Introduction is a frank admission of the ineptitude, inadequacy, and colossal imbecility of the legal fraternity about their own

field of activity. It is a thing of which one should be profoundly thankful that at least one man has the wisdom to see and the courage to speak.

We also welcome the author's frank discussion of the problem. We regret his use of the word insanity. This is one of the old stupidities thrust upon the community again by the legal machinery.

More books like this are needed. The juvenile delinquent is the stage at which proper legal measures of dealing with some very difficult problems begin. This work, though not written by one versed in a proper kind of psychiatry, is a beginning of better things.

JELLIFFE.

METHOD OF MEASURING THE DEVELOPMENT OF THE INTELLIGENCE OF YOUNG CHILDREN. By Alfred Binet and T. H. Simon. Authorized Translation by Clara Harrison Town, Ph.D., Director of the Department of Clinical Psychology, Lincoln State School and Colony, Lincoln, Ill. The Courier Co., Lincoln, Ill. Price $1.

This short monograph contains the best summary of the Binet-Simon tests that has appeared. These Binet-Simon tests have been brought from time to time to the attention of our readers, from 1906 to the present time.

The present translation is one that presents in revised and brief form the latest expression (1911) of the authors on these tests.

Here in the United States the Binet-Simon tests have been taken up with great enthusiasm, but unfortunately the information necessary to make them of practical value has not been as apparent as the interest. It is for this reason, as well as for a number of others, that the present translation is to be recommended.

The reviewer believes that all physicians interested in nervous and mental disease would be benefited by this small volume. Knowledge of the fact that it is available should be widespread, so that doctors and lawyers, especially the latter, should know what is going on. Modern criminology works with so much feeble-minded material, and the present attitude of the judiciary towards the general problem of criminology is so medieval if not archaic, that neurologists should call the attention of those interested in legal matters to works of this kind.

JELLIFFE.

INDEX TO SUBJECTS

Figures with asterisk (*) indicate original articles, and are accompanied with title. Figures unaccentuated, accompanied with title, indicate abstracts.

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