

MEDICINE.

UNDER THE CHARGE OF

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THE ETIOLOGY AND CURABILITY OF PERNICIOUS ANÆMIA.

It would be an error to say that only those are cases of pernicious anæmia which actually end in death. Moreover, the causes of certain forms of the disease have been discovered, and REYHER (*Deutsches Archiv für klinische Medizin*, Bd. 30, H. 1 and 2, 31-69) reports a series of really remarkable cases, in which the cause was clearly the presence of bothriocephalus latus. All of the patients had, at some time in their lives, evacuated portions of the parasite. Although some were in a desperate condition when treated with *felix mas.*, yet almost immediately after the expulsion of the worm very marked improvement set in, which rapidly advanced to complete recovery. The symptoms more particularly examined were as follows: There was the most profound anæmia, with great and steadily increasing debility, unaffected by any tonic treatment, and which would almost certainly have terminated fatally, had not the cause been discovered and removed. No explanation for this condition could be found in the external surroundings; no structural or functional changes in any of the organs could be detected, except diarrhœa in certain patients; fever was present at times in many cases; there was no loss of adipose tissue; retinal hemorrhages occurred in several instances, and the symptoms of intense cerebral anæmia existed. All these are the characteristics of the progressive pernicious anæmia of Biermer, and the cases cannot but be considered as instances of this disease produced and favored by the presence of bothriocephalus latus.

As regards the condition of the blood, the author observed an absolute diminution in the number of corpuscles, and the presence of numerous small, highly refracting, granular bodies. The red blood-cells had ceased to lie in rouleaux; were often larger than normal, or of irregular form. He was unable to confirm any of the observations made by others, except that he saw in one case the small red bodies described by Eichhorst.

As to the etiological connection of pernicious anæmia with bothriocephalus latus, it has been proved that the "brickburners' anæmia," the "disease of the Gotthardt tunnel laborers," and some other affections, all similar to Biermer's "pernicious anæmia," are occasioned by the presence of ankylostomum duodenale or allied parasitic worms. It is certainly reasonable to suppose that bothriocephalus latus may in certain cases produce the same symptoms, as its favorite abode also is the small intestine.

How the injury is accomplished cannot yet be explained. It is possible that the bothriocephalus may sometimes fix its suction apparatus directly

upon a bloodvessel, as does the ankylostomum; or some infectious matter may be introduced through the worm into the circulation. The author believes that any alterations of the red blood-cells which may exist must be the effect of the disease; for, were they the cause, so immediate an improvement of the symptoms would not follow the expulsion of the parasite.

Reyher thinks it possible that the existence of helminths may have been the cause of many of the cases of pernicious anæmia reported by various writers, and that the presence of the parasite was either overlooked at the autopsy or no importance laid upon it.

ON THE OPERATIVE THERAPEUTICS OF BASEDOW'S DISEASE.

HACK reports (*Deutsche med. Wochenschrift*, June 24, 1886) the case of a patient who presented the usual symptoms of Basedow's disease, and, in addition, suffered from a permanent obstruction to respiration through the nose. Examination revealed extreme hyperplasia of the erectile tissue of the middle and lower turbinated bones. Operation on the right side was followed on the next day by an almost total disappearance of the exophthalmus of this side. A similar, though not so marked, diminution occurred in the left eye after the left side was operated upon.

On reexamination several months later, it was found that an injection of the conjunctiva, which had at frequent intervals occurred, appeared much less often; the nervous palpitation had disappeared, the dilatation of the heart grown less, the goitre diminished in size, and an impaired sharpness of vision greatly improved.

Adopting the hypothesis that a neurosis of the sympathetic is the cause of Basedow's disease, Hack accounts for the recovery in this case on the ground that the seat of the disease lay in a permanent irritation of the peripheral filaments of the sympathetic in the nose. The symptoms, then, were vasodilator reflexes, by which the cardiac vessels and ganglia, the orbital expansile adipose tissue, and other parts affected, received too great a supply of blood. And operation upon the hyperplastic tissue was of benefit, just as it is in other reflex neuroses of the sympathetic, such as certain forms of asthma and of migraine.

DIABETIC HEMIPLEGIA.

R. LÉPINE and L. BLANC publish (*Revue de Médecine*, No. 2, 1886) an interesting case of diabetes mellitus, in the course of which right-sided hemiplegia developed. The patient, æt. thirty-nine, entered the clinic September, 15, 1881. He had been in good health until November, 1880, when suddenly symptoms of diabetes set in. The patient was then passing about 525 ounces of urine, and from 22 to 25 ounces of sugar daily. Under treatment the daily quantity of urine was reduced to 245 ounces.

Shortly after this amelioration the patient began to notice a feebleness in the right upper and lower extremities and right side of the trunk. This progressed so rapidly that in fifteen days there was complete right-sided hemiplegia. Simultaneously with the appearance of the hemiplegia, convulsions of the right side, including the right side of the face, set in. The convulsions recurred every four or five hours and lasted for five or six minutes. The

intelligence remained normal during the crises. Three weeks after the onset of the above symptoms embarrassment of speech was noticed. The convulsive seizures ceased ten days after admission into the hospital (Sept. 25), but the aphasia, which was complete, continued until the middle of October, at which time the patient could distinctly say "oui," "non." At the time of admission the intelligence was much lowered, the patient seemed demented. From this on improvement set in, and in the beginning of the year 1882 the state of the intelligence and hemiplegia had undergone a very marked improvement, but pulmonary phthisis now made itself manifest, and carried off the patient on the 22d of December, 1882. At the autopsy the brain showed no lesion perceptible by the naked eye. It was preserved in chromic acid (3 : 1000) for several months, and the liquid was renewed every eight days for the first few months. The brain was then examined with the microscope in sections. The left hemisphere showed an almost complete absence of the pyramidal cells, only a few triangular and small irregular cells could be seen. The neuroglia had undergone considerable change, its cellular elements were less numerous; it had lost its grained aspect, and appeared for the greater part made up of trabeculae. The capillaries were found dilated. The right hemisphere was normal in every respect.

ON THE PATHOLOGY OF MULTIPLE NEURITIS AND ALCOHOL PARALYSIS.

OPPENHEIM (*Zeitschrift für klinische Medizin*, Bd. xi. H. ii. and iii. S. 232-262) gives several instances of multiple neuritis produced by alcoholism, although "taking cold" was the exciting cause in some cases.

The symptoms consisted in partial paralysis, usually confined to the lower extremities, with more or less degeneration of the muscles, perceptible rather to the hand than to the eye. There was also diminution of the electrical excitability with the reaction of degeneration. More or less pain, frequently with great tenderness on pressure; incomplete tactile anesthesia, usually limited to the feet and legs; hyperesthesia to heat and painful impressions, and paresthesia were marked features. The gait was tactile-paretic, growing worse when the eyes were closed. The patellar reflex was abolished. This symptom frequently persisted long after the patients were in other respects well.

The cranial nerves were unaffected, except those supplying the muscles of the eye. Diplopia, paralysis of the accommodation, nystagmus, and immobility or sluggishness of the pupil were sometimes present. Implication of the optic nerve has been described by others, but was absent in Oppenheim's cases.

The disease resembles tabes dorsalis in some particulars, but the diagnosis is usually not difficult. In the cases under observation the pain was not so severe as in tabes; there was no girdle-pain, and never neuralgia. There was always more or less paralysis, and usually disturbances of the electrical excitability.

The therapeutics of the disorder consist in the use of warm baths, and later of electricity. The avoidance of alcoholic drinks is essential and usually insures recovery, although this may be long delayed.

PERIPHERAL NEURITIS IN PHTHISIS.

MM. PITRÉ and VAILLARD contribute an extensive article (*Revue de Médecine*, No. 3, 1886) on the peripheral neuritis frequently met with in phthisis. The neuritis, they say, may exist while the brain and cord, and their membranes, show no evidence of disease. The disease of the nerves, therefore, cannot be secondary, but must be primary. Clinically they recognize three groups:

I. Latent peripheral neuritis, which runs its course without manifesting any disturbance. The clinical notes of two such cases are reported. Histological examination of several of the nerves showed a segmentation of the myelin into masses and partial atrophy of the sheath.

II. Amyotrophic peripheral neuritis. This form is characterized by a diffuse paralysis, which is rapidly followed by muscular atrophy. It has a very close resemblance to subacute anterior myelitis. But a post-mortem examination reveals a healthy cord and membranes, and parenchymatous neuritis. Six cases belonging to this group are collected from recent medical literature, and a *résumé* given of each. They all presented features closely resembling subacute anterior myelitis, but were distinguished from it by one important phenomenon. "This was the existence of some form of sensory disturbance, such as neuralgic pains, anesthesia, hyperesthesia, loss of muscular sense, etc., concurrently with the paralysis or preceding it for a shorter or longer period."

III. Peripheral neuritis with disturbances of sensibility predominating. Few consumptives escape without having sensory disturbances at some time during their illness. These have various causes, some of which are gross lesions of the cord, meninges, or of the nerves themselves. Virchow has observed a case in which a solitary tubercle occupying the lateral column of the cervical cord caused a brachial neuralgia of the corresponding side. But in the cases falling under this group there is no other lesion of the nervous system than a parenchymatous inflammation of the peripheral nerves. Four such cases are narrated in full. The authors make the following conclusions:

1. In the course of tuberculosis, as in other infectious diseases, it is not rare to find the peripheral nerves the seat of parenchymatous changes preëxisting the characters of degenerative neuritis.
2. These changes develop primarily, and do not depend upon a preëxisting lesion of the brain or cord.
3. The pathological changes may involve indifferently the sensory, motor, or mixed nerves. They may equally attack the cranial nerves (optic, oculomotor nerves), pneumogastric, phrenic, etc.
4. The symptoms of these affections are very variable, and are still imperfectly known. On comparing them, however, the three clinical divisions above described will be readily distinguished.
5. The frequency of peripheral neuritis in consumptives, the variability of its distribution and symptomatology, explain the polymorphism of the nervous troubles observed in phthisis.

AN UNUSUAL FORM OF PROGRESSIVE MUSCULAR ATROPHY.

CHARCOT and MARIE (*Revue de Médecine*, No. 2, 1886), in an elaborate article, accompanied by several photographs, treat of an unusual form of progressive muscular atrophy.

The disease begins in the most distal parts of the inferior extremities, and gradually extends up the legs. The muscles of the thigh remain intact for a long time. Paralysis sets in at about the same time as does the atrophy, and keeps pace with it. The muscles of the upper extremities never become affected until a long interval elapses after the disease has attacked the inferior extremities. The intrinsic muscles of the hand are the first of the muscles of the superior extremity which become involved. From these the atrophy and paralysis pass gradually to the muscles of the forearm and arm; all the other muscles of the body remain absolutely intact. Though the affection may be said to progress symmetrically, the disease is usually more pronounced on one side. Fibrillar contractions are observed in most of the affected muscles. The excitability of the muscles by percussion is not increased; on the contrary, it is diminished, and disappears long before the loss of function and atrophy become complete. The tendon reflexes comport themselves much in the same way. An electrical examination could be carried out in only three of the subjects. In the most advanced state of the affection the muscles showed absolute inexcitability to both currents. In the muscles considerably altered "the reaction of degeneration" obtained; and, lastly, in the muscles slightly affected there was only a slight diminution of the electrical excitability. Vasomotor disturbances were manifest in a bluish or reddish discoloration of the skin of the affected members. The temperature was lowered; in four of the cases the sensibility was absolutely intact. In the fifth case there was anæsthesia to pricking and temperature, most marked in the soles of the feet. Another noteworthy feature in this case was the presence of pain, which, however, continued for only the first two years after the onset of the disease. The general condition may be said to offer nothing special of note; the patients enjoy good health. It may be of interest to mention the fact that the patients are constantly changing their position, so as to retain their equilibrium. The disease begins generally in infancy or in adolescence. In Chareot and Marie's five cases, three were three years, one was fourteen years, and one was fifteen years of age. Of nineteen cases observed by other authors, fourteen showed the affection before the age of twenty-two. The disorder seems to have a predilection for the periods between three and four years and fifteen and sixteen years. It may, however, occur later in life. Eichhorst had a case aged thirty-six years, and Wetherhee one aged thirty-nine. Heredity plays a very important rôle in the causation; but three of the authors' cases showed no hereditary taint whatever. Taking all the features into consideration, the authors think that these classes of cases belong to the myelopathies rather than to the myopathies. The clinical reports of similar cases to the authors, nineteen in number, and observed by Eulenburg, Eichhorst, Wetherhee, and Ormerod, are given at the conclusion of the paper.

STREPTOCOCCUS IN PNEUMONIA AFTER TYPHOID FEVER.

H. NEUMANN (*Berliner klinische Wochenschrift*, Nos. 26 and 27, 1886) reports a case of typhoid fever with noma and lobar pneumonia, followed by death. No typhoid bacilli could be found in the organs, probably because the disease was too far advanced. Very numerous cocci were, however, discovered in the pneumonic lung, which, upon cultivation, proved to be strep-

tococci. After making a large number of culture experiments and inoculations with the purpose of determining whether this species of streptococcus is identical with any of those described by Fränkel, Löffler, Krause, and others, Neumann comes to the conclusion that there exist no satisfactory and invariable points of difference between the various so-called species, either as regards their method of growth upon culture media, or in the symptoms they produce when inoculated upon animals. Even such supposedly distinct forms as the streptococcus of erysipelas, on the one side, and that of pus on the other, do not differ materially from the one found by him in the lung. The author believes that the various streptococci are really identical, but that they may in different cases possess different degrees of virulence when obtained from the organism, and that they may alter this degree upon cultivation.

In the case reported, it is most probable that the coccus was introduced directly into the lung by means of respiration—the ulcerative process in the mouth being the starting-point—and that a pneumonia was in this way produced in a subject already debilitated.

DISEASES OF THE HEART RESULTING FROM OVER-EXERTION.

LEYDEN publishes an exhaustive article under this title in the *Zeitschrift für Klinische Medizin*, Bd. xi. H. 2 and 3, 105-166. It has been recognized by many writers that diseases of the heart may be produced by muscular strain, as also by mental excitement or great emotion. The author quotes extensively from the literature of the subject, and speaks particularly of the "overstrain of the heart," as described by J. Seitz. Some distinguished authorities, however, claim that such a thing as the tiring or exhaustion of a heart, the muscular substance of which is perfectly healthy, cannot exist. Leyden has been convinced from an extensive experience, not only of its existence, but that it is very frequently a cause of many threatening cardiac symptoms.

Too often, as a result of our modern methods of physical examination, the pathological condition is called the disease, while no attention is paid to the manner in which it was produced. Thus, "dilatation of the heart" is designated the primary affection, whereas it is but the effect. Following the rational method of studying them, Leyden forms three groups of diseases of the heart due to over-exertion of the body:

1. Sclerosis of the aorta, aneurism of the aorta, arterio-sclerosis.
2. Insufficiency and rupture of the aortic valves.
3. The true "cardiac overstrain" of Seitz, in which the valves remain quite intact, and the muscle substance is but little or not at all affected.

As regards the first two classes, Leyden says it is probable that severe labor is often a cause of arterio-sclerosis. It is certain that it frequently produces aneurism. And that insufficiency of the aortic valves is often suddenly effected by violent muscular exertion is proved by numerous cases in medical literature, from which he quotes several very interesting instances. But he devotes attention particularly to the third class, and reports a series of instructive cases, from which he draws the following conclusions:

The symptoms of "cardiac overstrain" develop either suddenly or more gradually in individuals who have put forth violent exertion throughout a longer or short time, or in those who have employed perhaps only moderate

bodily exercise, while convalescing from some slight disease (Da Costa). We can recognize two stages:

First stage: Cardiac crethism. The symptoms are at first scarcely noticeable. The patient becomes easily tired, suffers some shortness of breath on exertion, and perhaps some pain about the heart, with palpitation. Of objective symptoms, the first to be observed is:

(a) *A change in the character of the pulse*, which becomes more rapid, especially after exercise, and at the same time irregular. This combination (*delirium cordis*) is present either constantly or at times in nearly all cases.

(b) *An increased heart's impulse* is another symptom, sometimes associated with the "gallop rhythm" described by Fränkel. The origin and indication of this peculiar phenomenon are not fully understood. It certainly occurs only in weak conditions of the heart.

(c) When the affection is advancing, *tremor cordis* develops itself. This symptom, recognizable to the hand as a peculiar trembling, undulating impulse, is caused by a succession of very rapid incomplete contractions.

Second stage: Cardiac dilatation. The symptoms of this stage are:

(a) *Dilatation of the Heart.* This, when present, can be usually although not always detected. The position of the apex beat, when perceptible, is the best criterion for the existence of dilatation of the left ventricle.

(b) *Auscultatory Symptoms.* The heart tones are usually clear, and either strong or weak. Sometimes the "gallop rhythm" is to be heard. Occasionally a systolic murmur is audible at the apex, due probably to a relative insufficiency of the mitral valve.

(c) *Functional Disturbances connected with Weakness of the Heart.* These include the symptoms of the first stage intensified. They are: Increased dyspnea amounting even to orthopnea; a great sense of pressure; attacks of pain in the cardiac region resembling often angina pectoris; total incapability for bodily or mental labor; cerebral symptoms, as vertigo and fainting (these may also occur in the first stage); disturbances of digestion which constitute symptoms of grave prognostic import, and disturbances of circulation similar to those seen in valvular affections, and prominent among these oedema.

A *third or terminal stage* of the disease exists, characterized by extreme weakness of the heart muscle. Asystolia or cardiac insufficiency is developed, with its attending symptoms; as cyanosis, suppression of urine, collapse, etc., and finally coma, ending in death. This stage seldom lasts long. It may, indeed, be so short that we speak of "sudden death."

As to prognosis and termination, the disease is always a serious affection, yet it can usually be arrested during the first stage, and complete or partial recovery takes place. Sometimes, however, symptoms of the greatest danger to life arise before any perceptible dilatation is reached.

In the second stage the tendency of the disease is toward a fatal termination; either rapidly or after lasting for years. Temporary improvement may repeatedly take place, and the dilatation even be reduced in amount. Sometimes the disease appears to begin with the second stage. In other cases an individual after violent exertion suffers at once from the symptoms of the terminal stage of heart overstrain, and dies after a short time.

The autopsy of all of Leyden's fatal cases revealed dilatation of the heart, especially of the left ventricle, together with a globular widening of the apex.

The other organs showed the ordinary results of passive congestion. The heart muscle was sometimes thinner than normal, especially at the apex, and frequently exhibited tendinous patches. It was often microscopically quite intact, but not infrequently had undergone slight fatty or fibrous degeneration in the layer just beneath the endothelium. Since this was never of a degree sufficient to account for the presence of dilatation by assuming that there had occurred earlier some myocarditis, Leyden believes the dilatation is due to a simple stretching of the previously healthy muscle, caused by the greatly increased arterial pressure following violent muscular action.

This over-exertion of the body may be the only acting cause, or it may be combined with others. Such, for example, are other diseases of the heart already existing, especially affections of the aortic valves. Leyden reports an interesting example of its combination with stenosis of the aortic orifice. Arterio-sclerosis, particularly as represented by contracted kidney, may also cooperate with bodily over-exertion to produce a dilated heart.

A series of other etiological influences, which of themselves are sufficient to produce cardiac weakness or cardiac erethism, will even more certainly secure results injurious to the heart, when combined with overstrain of the body. They are the abuse of alcoholic drinks; "fat-heart" (*i. e.*, the weak heart produced by corpulency); the previous occurrence of acute diseases; anemia and chlorosis; advancing years, and finally mental agitation and excitement of the passions. These latter might be called "psychical overstrain," since they produce the two most prominent symptoms following corporeal strain, namely arrhythmia and dilatation of the heart. We may also distinguish the two stages, that of cardiac erethism, and that of cardiac dilatation. Leyden has observed instances of serious injury to the heart arising from a combination of psychical and corporeal overstrain.

An unusual group of cases, instances of which the author relates, differ considerably from those already described. Over-exertion of mind or body is the cause, but the symptoms consist in attacks of fainting, general weakness, and a *very marked retardation of the pulse rate* to forty, thirty, or fewer beats per minute. This latter symptom is the most prominent one, and frequently persists after the others have disappeared.

The treatment must be directed against the cause. All over-exertion is to be avoided; and even absolute rest in bed is often necessary. The diet must be nourishing and stimulating, and it is of the highest importance that dyspepsia, if present, be removed. Of drugs, by far the most useful is digitalis. Its beneficial action is to be judged by its diminishing dyspnea, producing diuresis, and strengthening the systole; not by its retarding the rapid pulse-rate. This is not always to be sought after, and its occurrence is an indication that the desired action of the drug upon the heart has been overstepped. Its employment is contraindicated in excessive cardiac weakness, and in very rapid or very slow pulse-rate. When administered, use rather large doses for one to three weeks, and then stop for a time, as it loses its effect. Helleborine, caffeine, strophanthine, and convallaria are similar to digitalis in their effect, but inferior to it.

Narcotics often cannot be dispensed with, in order to give rest for some hours to patients suffering great pain or oppression, but they must be used with care. Tonics are sometimes beneficial—extract of coca among others.

Cheerfulness is to be cultivated. Change of scene and air (but not to salt air) are useful.

Various "cures" have been recommended for chronic diseases of the heart. The milk cure, used by Russian physicians, is not favored by Leyden. Salt baths or iron baths, as recommended by Scholz, and others, may be beneficial. Massage and gymnastics of a suitable kind have been much praised, and would perhaps be of use if employed in proper cases. He is opposed to the "heart gymnastics" of Oertel, on the ground that they are either inefficient or injurious.

As a supplement to his paper, Leyden publishes a personal communication from Dieckerhoff, professor at the veterinary school in Berlin, regarding the diseases of the heart occurring in horses after over-exertion. There may be produced an enlargement *in toto*, hypertrophy with dilatation, and various lesions of the valves. They are most frequently observed in horses used for rapid travelling, since the greatest and most prolonged strain is experienced by them.

CONTRIBUTIONS TO THE DIAGNOSIS AND THERAPEUTICS OF DISEASES OF THE STOMACH.

RIEGL (*Zeitschrift für klinische Medizin*, Bd. xi., H. 2 and 3, 167-216) publishes the results of his experience during the year 1885, but devotes his long and exhaustive article solely to the bearing of the chemical examination of the secretion of the stomach upon the diagnosis and therapeutics of its diseases. This chemical examination he considers, in most cases, indispensable, and it is often the sole means of forming a correct diagnosis, particularly in carcinoma.

His method of procedure is as follows: He administers a "test meal" at dinner-time, consisting of a mixed diet, the same for every case, and in six or seven hours he removes this *undiluted* by means of a stomach-tube. Digestion should be complete within seven hours and the stomach empty, therefore any portions of undigested food thus removed prove that the process has been unnaturally delayed. He next filters the mass thus obtained, and tests the filtrate with reference to the following conditions: (1) The reaction as exhibited with litmus. (2) The presence of free hydrochloric acid and (3) of organic acids. The tests preferred are tropæolin oo 3, methyl-violet, and the carbolyzed chloride of iron test of Uffelmann. (4) The digestive strength ascertained by the artificial digestion of a portion of albumen of a definite size. (5) The amount of free hydrochloric acid present, estimated quantitatively. Sometimes he tests also for peptone and parapeptone. Simply the macroscopic examination of the material left upon the filter will, in some cases, render an almost certain diagnosis possible. Vomited matter cannot be used for purposes of diagnosis, for the act of vomiting generally occurs soon after a meal, and free hydrochloric acid does not normally appear until about three hours after eating. The admixture of mucus from the mouth and nose, or of regurgitated bile interferes, too, with the chemical tests.

Riegel's conclusions, based upon 1379 chemical examinations in 122 cases, are that in diseases of the stomach we may find four conditions of the secretion: (1) It is completely normal. (2) Free hydrochloric acid is diminished in amount or absent (*i. e.*, cannot be detected by the tests mentioned), organic

acids are usually abundant; peptic strength is wanting. (3) Hydrochloric acid is present, together with a large quantity of the organic acids. (4) There is a hypersecretion of hydrochloric acid. In general, whenever free hydrochloric acid is to be found there is no diminution of the digestive strength.

Considering now the bearing of these various conditions of the secretion upon the different diseases of the stomach, the author finds that in *carcinoma ventriculi* free hydrochloric acid is almost constantly absent and digestive power is entirely wanting. This is the strongest of all diagnostic signs, and without it a diagnosis of carcinoma cannot safely be made, even though other characteristic symptoms be present. During seven years he has seen no case in which the acid was generally or even frequently present. The cause for this absence of the acid is not yet fully explained. Riegel believes it to be due to some alteration produced in the gastric juices by the carcinoma.

In certain cases of *continuous discharge of bile into the stomach* he found no free acid or peptic strength. This is caused by the chemical action of the bile upon the gastric juice.

In *ulcus ventriculi* the removal of the contents of the stomach cannot be safely practised while the ulcer is still unhealed. In convalescents the peptic strength was normal; organic acids were usually absent, and the amount of free hydrochloric acid rather increased than otherwise.

In *gastric atasia* (not due to carcinoma) free hydrochloric acid was very rarely absent, and the digestive strength was not diminished. Certain cases showed the acid to be much increased in quantity, and at all times present in the stomach, thus interfering with the digestion of starchy food. Organic acids were often abundant.

In *chronic dyspepsia* the amount of free hydrochloric acid was sometimes diminished but often increased, and the peptic strength was usually normal. Lactic acid was generally present, and at a time when it should normally have disappeared.

Nervous dyspepsia is characterized by severe dyspeptic symptoms during digestion, yet without alteration of the secretion in any respect. It is a neurosis of secretion. Riegel treats of the therapeutics of gastric disorders only as indicated by the chemical examination.

Dilatation (apart from that caused by pyloric stenosis) is produced by retarded digestion, causing food to be continually present in the stomach. This retardation is effected: (1) by a diminution of the secretion; (2) by abnormal fermentation; (3) by hypersecretion; (4) by diminished muscular power. In all these conditions the washing out of the stomach must be practised daily, in order to remove all undigested food before fresh nutriment is given. But this should always be combined with other methods of treatment, as indicated by the chemical examination—such as the use of antacids, the avoidance of starchy foods in cases of hypersecretion, and the employment of massage and electricity when there is lack of motor tone. He prefers to wash out the stomach in the evening, and then to give a very light and easily digestible meal. The organ thus obtains a period of rest during the night.

In all cases of diminished secretion he advises the administration of hydrochloric acid in divided doses, beginning an hour after meals. Thus the presence of too great an amount of acid is avoided, and the digestion of starch not interfered with. Yet in carcinoma he has never found that hydrochloric acid,

when given alone, appeared in the gastric juice, or increased its ability to digest. He believes that large doses of the acid combined with pepsin might have a better effect. Peptones, too, are well borne by the stomach, and patients often improve for a time on them.

ON THE TREATMENT OF GASTRIC ULCER WITH THE ALBUMINATE OF IRON.

Realizing that it is often necessary to remove the ultimate cause—the anæmia or chlorosis—before the healing of a gastric ulcer can be accomplished; and having had five years of most satisfactory experience with the albuminate of iron in other affections, GEMPT (*Berliner klinische Wochenschrift*, No. 15, 1886) was led to employ it in cases of gastric ulcer in which the ulcer was still unhealed.

The use of iron in this stage has been universally condemned on account of its irritant effect. But the liquor ferri albuminate made by Drees, of Benheim, is of absolutely neutral reaction, free from any metallic or astringent taste, does not coagulate albumen, and is perfectly well borne by the stomach. Gempt administers two to four grammes of the solution, alone or diluted with milk, three times a day and shortly before meals, as it appears to increase the appetite. The recent occurrence of hæmatemesis is no contraindication to its use. His results have been surprisingly good. After the exhibition of the remedy was commenced, he has never seen hæmorrhage recur, although he has used it in numerous cases. Nor has he ever seen its administration produce pain, or increase it if already existing. It seems to be absolutely unirritating to the walls of the stomach or the surface of the ulcer.

With the use of the albuminate he combines a careful diet of milk or beef peptones, the employment of small doses of Carlsbad salts, as recommended by v. Ziemssen, and of small doses of morphia when absolutely necessary. It is very important to procure a reliable preparation of the iron albuminate, since some are not totally free from acid.

ON THE DIAGNOSIS AND THERAPY OF PERFORATIVE PERITONITIS.

E. WAGNER (*Deutsches Archiv für klinische Medicin*, B. 39, H. i. and ii. S. 70) reports an unusual instance of perforation of the intestine with peritonitis; and after discussing the various means of diagnosis proposed, draws the following conclusions:

The only infallible method of differentiating between intestinal meteorism and peritoneal meteorism, occurring respectively in acute peritonitis and in peritonitis from perforation, lies in the fact that in the former the coils of intestine are visible, or their movements may be felt, or, at any rate, heard on auscultation; while in the latter no movements can be detected by any of these methods. The auscultation must be continued at least two minutes.

This condition is produced by the presence of gas in the peritoneal cavity, which displaces the intestines backward and compresses them.

The only proper method of treatment consists in abdominal section for the removal of the contained fluid and gas.

each is recorded.¹ Adhesions of the tip to the mesentery, the rectum, and bladder are frequent. Its presence in a hernial canal led Shaw² to suspect a disease of the testicle. Thurmann³ records a like occurrence, and the formation of a scrotal tumor as large as the two fists in consequence of an inflammation of the appendix. Its tip has been found⁴ adherent to the abdominal wall in the vicinity of the navel, and pus has been discharged from it at this point.

Complete or partial obliterations of the canal are frequent. In the former instance a solid cord results. In the latter, a considerable cystic dilatation of the tip may follow; or a funnel-shaped pouch at the origin is often associated with obliteration of the remaining portion of the tube.

These variations in length, position, and patency, whether congenital or acquired, are of obvious importance in explaining many of the apparent differences in the clinical histories of typhlitis and perityphlitis. Their significance in the etiology of appendicitis will appear directly.

The frequent presence of foreign bodies in the canal of the appendix is of well-known occurrence. These are a variety of seeds, especially of fruit. Less common are hairs, particularly bristles, worms or their eggs, shot, pins, pills, and gall-stones. By far the most numerous are moulded masses of inspissated feces, more or less cylindrical in shape and of extreme variation in density. Some are of the consistency of normal excrement, while others are of stony hardness in consequence of their infiltration with earthy salts. The relative frequency of their presence in the appendix is manifested by the records of fatal cases of appendicitis, but their actual frequency far exceeds the number of these cases. In my own experience it is rather the rule than the exception for the appendix to contain moulded, more or less inspissated feces.

The frequency of such retention may be due to the congenital or acquired peculiarities of the appendix already described. German writers attach a certain importance to the presence of a valve-like projection of mucous membrane, discovered by Gerlach,⁵ at the mouth of the appendix. Although a pinhole opening may result, any considerable obstruction must be of extreme rarity. The habits of individuals with reference to diet and regulation of the bowels are of unquestioned importance. Equally significant is the controlling fact, that most persons suffering from habitual constipation and accustomed to swallow the seeds of fruit, escape inflammation of the appendix.

Recognizing the lack of agreement in the use of the terms typhlitis and perityphlitis, a collection has been made of 257 cases of perforating

¹ Trans. Lond. Path. Soc., 1876, xxvii. 161.

² Prov. Med. and Surg. Journ., 1848, 477.

³ Zeitschr. f. rat. med., 1847, vi. 12.

⁴ Ibid., 1848, i. 270.

⁵ Lancet, 1839-40, ii. 565.

CHYLURIA WITH CHYLOUS ASCITES.

PROFESSOR SENATOR records an interesting case of this not very common affection. The patient, æt. forty-six, a Prussian, had lived for a long time in North America, and resided most of the time on a marshy peninsula in Massachusetts. Of his antecedent disorders, it is stated that he had had a double sciatica, lumbago, and an illness that set in with fever and headache, in the course of which icterus developed, attended with a dark brown urine. It was not until considerably later that the milky urine made its appearance. On examination, Senator found an enlargement of the liver and spleen, without any further change. At the apex was heard a low murmur, with the first sound. The urine had the appearance of a yellowish emulsion; had a sp. gr. of 1.020, without any remarkable smell, with an acid reaction; there was a copious sediment of urates. The serum on the surface microscopically showed nothing more than fat globules. The supernatant fluid on being removed from the sediment, and shaken up with ether, cleared up considerably, but not entirely. This it did, however, on the addition of liquor potassæ. The urine contained, in addition to the fat globules, serum albumen, globulin, or fibrinogen and propepton. The chylous feature of the urine was most marked in that passed during the night or toward the morning; that excreted during the day was free from chyle. The chyluria continued for three weeks, then disappeared. Ascites developed, and the effusion of fluid was so great that tapping had to be performed. Nine litres of a greenish milky fluid were withdrawn, possessing a neutral reaction, and a sp. gr. of 1.015. The fluid cleared up on the addition of ether. Microscopic examination revealed extremely fine fat granules and a few lymphoid cells. The patient became extremely emaciated, and, after a time, succumbed.

An autopsy was refused. The diagnosis of hepatic cirrhosis, with chronic peritonitis, was made. Two different conditions may give rise to a milky appearance of ascitic fluid: (1) finely divided fat, mixed with real chyle (hydrops chylosus); (2) finely divided fat, mixed with fat globules (hydrops adiposus). The first may have for its causes: (1) injury of the chyle vessels, or rupture from over-disturbance, due to coarse mechanical obstruction; (2) the presence of parasites (*filaria sanguinis*) in the blood, causing stagnation and perforation of the chyle vessels.

Hydrops adiposus may be produced (1) by a fatty degeneration of the ascitic effusion, such as has been observed in carcinoma and tubercle of the peritoneum, and occasionally in simple degeneration of the peritoneal endothelium, without any other abnormality; (2) by an abnormal amount of fat in the blood—lipæmia. The remarks made about chylous ascites apply to chyluria. The differential points of the two forms, chyluria and adiposuria, are recognized with the microscope. In chyluria, excepting lymph cells, pus cells, and a few red blood-corpuscles, there will not be found any tissue elements, especially no tube casts or epithelium. In adiposuria, on the other hand, the urine will contain fat cells, various cylinders, and red blood-corpuscles. In that form of lipuria, however, due to lipæmia, all morphological elements will be wanting. It would seem as if the fat cells simply transude through the walls of the vessels without giving rise to any irritation.

IMPROVEMENT IN THE USE OF FEHLING'S SOLUTION.

As is well known, in performing the titration for sugar in urine with Fehling's solution, it is frequently difficult to determine exactly the moment of completed reaction. Generally, when this point has been reached, the precipitate falls at once as a more or less flocculent mass, leaving, in a few moments, a clear supernatant fluid the color of which there is no difficulty to determine. But it often happens, especially when the percentage of sugar is small, that in spite of precipitation there remains a permanent greenish-yellow turbidity, due to fine particles of cuprous oxide in suspension, and of a degree sufficient to hide completely the delicate shades of blue which the fluid assumes as the reaction nears completion. It is impossible to remove this turbidity by filtration, for the particles of suboxide are so fine that they will pass through any filter-paper. Nor is this turbidity the only difficulty, for the urine contains normally substances which not only reduce the cupric salt to a cuprous, but also redissolve the cuprous oxide when formed; among these are creatinin, uric acid, ammonia evolved from the nitrogenous substances by the NaHO of the Fehling's solution, and glyeonic acid compounds. Hence, when a considerable amount of sugar is present, it is customary to dilute the urine so as to minimize the reducing and dissolving influences as far as possible.

In order to obviate the difficulty which this persistent turbidity presents, I. MUNK (*Virchow's Archiv*, 1886, vol. cv. p. 63), after experimenting in various directions, found that the addition of three to five drops of a fifteen per cent. solution of CaCl_2 , when 10 c. c. of Fehling's solution had been used, was sufficient to carry down with it everything remaining in suspension, and to leave a fluid above, not only perfectly clear, but also containing no trace of copper in solution. When the calcium chloride is added there is formed, in addition to calcium hydroxide, calcium tartrate. The tartrate, though soluble when cold, forms a gelatinous precipitate at the boiling temperature, and it is this which carries all before it as it settles. Another, though minor advantage, is that it prevents the precipitation of earthy phosphates and carbonates which occurs when urine is added to the alkaline copper solution, it having the power of holding these precipitates in solution.

Munk finds this method to answer perfectly well for urines in which the proportion of sugar is even less than one per cent., and the amount of creatinin, etc., large, though a larger amount—fifteen drops—of the CaCl_2 solution will then be necessary. The solution should be added after the first precipitation by the sugar has taken place. As from the character of the precipitate ebullition is liable to be accompanied by sudden and violent liberations of steam, it is advisable to use a small flame and a fine-meshed gauze beneath the flask.

QUANTITATIVE DETERMINATION OF THE REDUCING SUBSTANCES IN NORMAL URINE.

Certain constituents of normal urine, known collectively as "reducing substances," have the power of reducing cupric to cuprous oxide, while at the same time they hold the latter in complete or partial solution when once formed. Hence the turbid amber or yellowish or greenish-red color

often assumed by uric acid on boiling with alkaline copper solutions. This power of the reducing substances forms, necessarily, a small but nevertheless appreciable element of error in the quantitative determination of glucose by Fehling's method. FLÜCKIGER (*Zeitschr. f. Phys. Chem.*, vol. ix.), SALKOWSKI, (*Centralbl. f. d. med. Wissensch.*, 1886, No. 10), and I. MUNK (*Virchow's Archiv*, 1886, vol. cv.), have sought to determine the amount of these substances.

Flückiger adds, after the copper salt has been reduced, a $\frac{1}{2}$ per cent. solution of glucose from a burette, till all the cuprous oxide in solution or suspension has been precipitated. From the amount necessary to produce complete precipitation the reducing power of the volume of urine used is calculated. He determined it to be equal to a solution containing 0.15 to 0.25 per cent. of glucose.

Salkowski's method is as follows: 5 c. c. of urine, 5 c. c. of sodium hydate solution (sp. gr. 1.34), and 3 to 6 c. c. of a ten per cent. cupric sulphate solution are boiled together for five minutes. The mixture is then feebly acidified with hydrochloric acid, and the cuprous oxide which has been formed precipitated by potassium sulphocyanide; the precipitate is then dried and weighed. From this it was determined that the average reducing power of the urine was equal to that of a 0.1 per cent. glucose solution.

In repeating Flückiger's experiments, Munk met with the same difficulty mentioned in the preceding notice, namely, that the cuprous oxide remained in a state of fine suspension in many cases, even after the addition of what was afterward proved to be quite an excess of glucose. To overcome this difficulty he had recourse to the CaCl_2 solution described above, with excellent results, the entire precipitate being carried down, leaving a clear fluid above. In nine specimens of normal urine examined, he found the amount of reducing substances, calculated as glucose, to vary between 0.16 and 0.47 per cent., an average of 0.3 per cent.

ALBUMINOMETRY BY ESCHACH'S METHOD.

ESCHACH, of Paris, had tubes so graduated that when albumen was precipitated in them by a picric acid solution, and allowed to stand twenty-four hours, each degree covered by the sediment corresponded to so many grammes of albumen per litre of urine. His picric acid solution is made as follows: Picric acid 10 grammes, citric acid 20 grammes, water 1000 grammes. George Johnson, of London (*Lancet*, July 10, 1886), has recently tested the accuracy of this method with, as he states, gratifying results. He finds that a solution of picric acid, five grains to the ounce, gives results identical with those obtained by Eschach's solution, while it does not, like the latter, precipitate the urates and uric acid, which, when abundant, may prove a source of no inconsiderable error by increasing the bulk of the precipitate. VEALE, of London, and GUTTMANN, of Berlin, also testify to the accuracy of this method. The tubes may be had of Brewer Frères, 43 Rue St. André des Arts, Paris, and of E. Cetti, 36 Brooke Street, Holborn, London.

OXYBUTYRIC ACID IN DIABETIC URINE.

STADELMAN (*Zeitschr. f. Biol.*, xxi. p. 140) agrees with Külz and Minkowski in affirming that the acid found in the urine, in many cases of diabetes, is

oxybutyric acid. In accordance with his view that diabetic coma results from the presence of an acid in the blood, he proposes to treat these cases with intravenous injections of a three to five per cent. solution of sodium carbonate. He injected considerable quantities of a seven per cent. solution into the veins of a dog with no untoward results.

CONDITIONS AFFECTING THE PRESENCE OF THE VOLATILE FATTY ACIDS IN THE URINE.

In normal urine VON JAKSCH (*Tagebl. d. 58 Vers. deutsch. Naturf. u. Aerzte*, Strassburg, 1885) found volatile fatty acids to exist preformed, in amounts varying from mere traces to 0.008 gramme a day. The variation in quantity is very considerable, and depends on the character of the food taken. Alcohol increases it. In the febrile condition relatively large quantities are found (from 0.06 to 0.1 gramme in twenty-four hours), the amount being proportional to the height of the fever. In pneumonia and phthisis the increase appears to depend chiefly on acetic and butyric acids, but in typhoid fever on acetic acid alone. In all organic hepatic disease (cirrhosis, abscess, chronic hepatitis, carcinoma, and syphilitic liver) the quantity often amounted to over 0.1 gramme a day. In a case of diabetes with acetæuria, no fatty acids were found. The term "lipæcæuria" has been applied to this condition.

A NEW HÆMOMETER.

VON FLEISCHL (*Oesterr. med. Jahrb.*, 1885 and 1886) has constructed a new form of apparatus for measuring the quantity of coloring matter present in the blood, intended for rapid and accurate clinical use. He very correctly calls attention to the fact that the practice now in vogue of counting the corpuscles is of comparatively little value, since it is not their number but their richness in hæmoglobin which is of the more importance. The determination is made by comparing the color of a definitely diluted specimen of blood with that of an illuminated wedge of ruby colored glass, upon which are graduations showing the correspondence between the different tints of the glass, as conditioned by its thickness, and solutions of hæmoglobin of certain strengths. The apparatus is manufactured by Reichert, Bennengasse 26, Vienna.

SURGERY.

IN EUROPE.

UNDER THE CHARGE OF

FREDERICK TREVES, F.R.C.S.,

SURGEON TO, AND LECTURER ON ANATOMY AT, THE LONDON HOSPITAL.

RECENT SURGICAL LITERATURE.

Since the appearance of the last summary, two new volumes of the *Dictionnaire Encyclopédique des Sciences Médicales* have been issued. The first runs from "Tep" to "Tet." The most important article comes under the