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तदेव युक्तं भेषज्यं यदारोग्याय कल्पते ।
सुचैव भिषजां श्रेष्ठो रोगेभ्यो यः प्रभोचयेत् ।
चरकसंहिता ।

That alone is the right medicine which can remove disease :
He alone is the true physician who can restore health.

Charaka Samhitá.

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COMMON DISEASES AND THEIR TREATMENT.

XI.

(Continued from March Number p. 105.)

Nitricum acidum has the following symptoms: *pain in bones; drawing pains in almost all parts, suddenly appearing and disappearing; drawing pain in periosteum of all bones, as before intermittent fever; tearing of nerves with thirst; inclination to take cold (Ka. c.); pain in back after taking cold; sensitiveness of whole body to open air; weakness (Ka. c., Phos. ac., Merc., Mur. ac., Sul. ac., etc.); spasmodic stiffness of back and whole body; shooting pains, as if caused by splinters stuck into affected parts on slightest contact with anything; sensation as if a band were around affected parts; as though a band around bones; jerking pain in inner parts; rickets; inflammation, swelling and suppuration of glands; pains on change of weather; pains which are perceptible during sleep; aggravation towards evening, especially of the drawing pains; aggravation on lying down; most symptoms disappear when riding in a carriage*

(Graph.); cracking of vertebrae; tensive pain in muscles of neck; *stiffness of nape of neck*; pain between scapulæ; lumbar region as if stiff; cracking of joints on motion; jerking in joints with tearing; aching in bones; *axillary glands swollen, painful and inflamed*; *bruised pain in upper arm* so that she could not raise it; tearing in elbow extending to wrist; bruised pain in wrist; *tearing in lower extremities worse at night*; *tearing in bones of lower extremities*; *bruised pain as from fatigue*; *deep seated feeling in extremities as if dogs were gnawing the flesh and bones and as if the sinews were pulled up*; tensive pain in right hip; pain in hollow of knee as if stiff; cracking of ankles when walking; sprained pain in ankle; stitches in malleoli; inflamed corns; pain beneath nail of great toe; toes, soles, corns sensitive as if inflamed; sore pain in shin of tibia from ankle to knee.

The peculiarities of the pains are that the bones and ends of joints are affected. Another feature is the sensation as if a band were round the affected parts and round the affected bones. The inflammation of bones is the characteristic of nitric acid. The tension of a band round the inflammatory portion helps its use. The pain in the shin of tibia is an indication of the medicine. Allen writes: "In general, indicated for the bad effects of Mercury, to which it is similar. General aggravation from water, on washing (Phos.). Foul odor of all excretions; foul breath, offensive salivation, etc. The pains are almost always splinter-like (Hep)."

Nitric acid has been mostly used in cases of syphilis, where either bone or gland is affected. In other cases of inflammation its use remains unknown. The general belief is that it is an antidote to some kind of miasm. Clarke says: "But in addition to its miasm relationship, *Nit. ac.*, has drug relationships of great importance. It is one of the chief antidotes of *Merc.*, and it is in cases of syphilis that have been over-dosed with *Merc.*, that its action is most brilliant. I have known it do equally well when used after over-dosing with *Kali iod.*, whether in syphilitic or non-syphilitic cases." Hughes thus speaks of

Guernsey's indications : " Dr. Guernsey's indications for Nitric acid are chiefly offensive urine, smelling like that of horses, restless after midnight, and (in women) violent downward pressure in the pelvis, with pain in back and thighs."

Amelioration of symptoms due to Nitric acid as illustrated by riding a carriage in the following case of Dr. Hendricks is cited by Hoyne : " A lady making experiments with a galvanic battery was exposed for some time to the fumes of *Nit. ac.* At once she is taken with a peculiar anguish ; runs to her physician ; but as he is not at home, hires a carriage to drive to the house where she expects to find him ; during her ride all her anguish is gone ; arrived at home, she feels as bad as ever, and feels herself thus forced to drive about the whole day till all the effects of the *Nit. ac.*, have passed off." This peculiar anguish may come on in many kinds of troubles and especially in dyspepsia.

Nux Moschata is Nutmeg. Of it Hempel and Arndt write : " This is the fruit of the *myristica fragrans*, a tree growing on the Molucca Islands. It consists of an outer envelope, and of a reddish shell known as *Mace*, which is closely adhering to the nut, and leaves depressions upon it when removed. The nut itself is dipped in limewater by the Dutch before it is shipped off as an article of trade. The limewater, traces of which may be seen on the nut, protects it against the ravages of worms which are apt to perforate its interior."

The tincture from the dried nut necessarily obliges the slight mixture of calcarea carb derived from the limewater, in which the nuts are dipped to preserve them. Whether that calcarea aggravates or ameliorates the effect of the drug remains unknown. Clarke remarks, " Tincture of powdered seeds deprived of the Mace. This is the official direction. But it would be well to make a tincture of the nut with the Mace, as some symptoms of Mace are included. Also a fresh nut and fresh plant tincture should be prepared and tested." Hering has recommended the trituration and tincture of the dried seed. We are disposed to side with Clarke in having the tincture from

the nut as well as the mace. It would be better if tincture can be prepared from the fresh product.

Nux moschata has the following symptoms: *Strange feeling over whole system, with almost irresistible sleepiness, jactitation of muscles (Hvos., Nux. v.), intermittent wandering digging in small spots; wandering pinching that increased and decreased in waves, in spots in bones; pains in parts on which he lies, if he lies on a moderately hard substance; soreness and bruised sensation; faint (Mosch., Sep., Dig.); Faint and sickly sensation; digging and pressive pains, which pass from place to place, occupy only a small space, continue but a few moments, and so on return; bruised pain at side of lumbar vertebrae; sensation of fomentation in muscles; tingling in toes as after freezing, worse metatarsal joints, it extends over sole and heel, which also pain as if bruised from jumping.*

Allen writes of amelioration in open air. Clarke on the contrary holds that there is "aggravation in the open air; in cold air; in cold and wet weather; when the weather changes, whether from dry and pleasant to wet, or *vice versâ*, until it becomes settled; in wet weather; in windy weather; lying on painful side.—Better in the room; air being warm; in dry weather."

Hempel and Arndt record the following case. "Mrs. B. S., aged about thirty years, at 11 A. M., grated a large nutmeg upon an egg and some sugar, and ate the whole of it between then and 5 P. M. During the evening she had dullness of senses and loss of control. She could have been led anywhere without resistance. Loss of will power. The upper eyelids were swollen and red around the borders, and drooping. She looked as though she had been weeping. Her hand, to her, looked red, too large, and as if covered with red spots. Vision was indistinct; everything looked red. She now has a sensation as if everything had fallen back against the rectum accompanied with violent straining and urging to stool. Crampy, forcing down pain in the bowels and rectum. Stools large and mushy. Mouth dry, but no thirst. These symptoms were all

relieved within an hour by a dose of nux vomica. I called again at 7 A. M. of the next day, and received from her the following description of her symptoms: I had no desire for water from the time I commenced taking it, although the mouth and lips were very dry. Frequent passages of light-coloured urine, clear like well-water, but in small quantities and with constant desire. There was also protrusion of the rectum. The head felt full and expanded, but did not pain. I felt foolishly happy, but could not talk; had no desire to talk; never felt so happy in my life. Everything looked too large; there was darkness and mist before my eyes; sensation as if I had been crying; my eyes and lids felt swollen, bulged out. There was a feeling as if a string had been tied tightly round the arms, and all the blood had rushed into my hands. I felt perfectly easeless; nothing could have offended me. The stools at first were very black and hard; afterwards watery, and then mushy. There was numbness and fulness of the hands; reeling and stumbling when walking. (Dr. H. N. Martin in *Hahn. Monthly*, September, 1870.)

We are interested at present with the "*feeling as if a string had been tied tightly around the arms, and all the blood had rushed into my hands.*" The congestion and inflammation of the arms with the feeling as if a string had been tied round them should help in cases where the symptoms are manifested without much pain. Indifference is another leading feature. Dryness of mouth and throat without thirst is said to be a keynote by Guernsey. It can be used as a medicine for traumatic inflammation is evident from the following case in Hoyne.

"*Shock of injury.*—Dr. J. C. Morgan gives the following: constant sleepiness, skin cool and sensitive to exposures, oppression from pit of stomach to chest; slow, rattling breathing; apoplectic dreaminess; the least exertion causes great weakness and sleepiness; diarrhoea."

Nux vomica is the Prince of the homœopathic remedies and can be said to be mostly of Indian origin. It is found in tropical India, rare in Bengal but common in Madras and Tenasserim.

Dr. George Watt in his Dictionary of Economic Products of India says :

“Nux vomica does not appear to have been used in early Sanskrit medicine, though it is quite possible that some part of the tree may have been used by the aboriginal tribes of India from a very early date, since we find the wood used now as a common tonic over very extensive tracts of country. In the more recent Sanskrit compilations we find it mentioned under its vernacular name Kuchila (Dutt). Among the Hindu practitioners of the present day, the Seeds are, in various combinations used as a medicine for dyspepsia and diseases of the nervous system. On the Malabar coast the Root is given in snake-bite, and in Bombay the Wood is a popular remedy, that of *S. COLUBRINA*, in the dyspepsia of vegetarians. In the Konkan small doses of the seeds are given in colic combined with aromatics, and the JUICE of the fresh wood (obtained by applying heat to the middle of a straight stick to both ends of which a small pot can be tied, is given in doses of a few drops in cholera and acute dysentery. (*Dymock*). The OIL from the fresh seeds is used as an external application in chronic rheumatism.”

Further on, “In European medicine it was first known about the middle of the sixteenth century when Valerius Cordus who wrote in Germany gave a very accurate description of the appearance of the seeds, but for, at any rate, a century later it was not used in medicine, since Parkinson (1640) remarks that its chief use was for poisoning cats, dogs, crows and ravens, and it was not till the beginning of the present century (nineteenth) that its value as a nervine tonic was recognised by European practitioners.”

In Sanskrit literature its name is Kuchela (कुचला), and it is principally used in leprosy.

The seeds contain the alkaloids Strychnia, Brucia and Igasurie or Strychnic acid. In the abridged edition of Pereira's *Materia Medica* by Bentley and Redwood the following with regard to Brucia is mentioned :

According to Dr. Fuss, brucia is not a peculiar alkaloid, but a compound of strychnia and resin (yellow colouring matters). He says that he has proved this both analytically and synthetically, and he ascribes this property of becoming reddened by nitric acid, and by chlorine, to the resin present. The *Salts of brucia* are readily formed by saturating dilute acids with brucia. They are soluble, crystallisable, and have a bitter taste." Dr. George Watt says: "Nuxvomica seeds contain two alkaloids, .2 to .5 per cent of strychnine and .12 to 1 per cent. of brucine, united with an acid, strychnic or igasuric acid.....These substances seem to exist not only in the seeds but in the wood and root, and the leaves of the parasitic plants even, growing on the tree, seem to acquire its poisonous properties and to contain the same alkaloids."

It will be seen that the proportion of Strychnia only varies from .2 to .5 per cent., whereas Brucia remains either so high as .1 per cent. or it is so low as .12 per cent. This variation may create some difference in the drug-action. If fully ripe seeds are taken for tincture perhaps the uniformity of action may be ensured.

Tincture of fresh ripe seeds have been prepared by us and it has given a deep red colour unlike that imported from foreign countries. The dilutions from these tinctures have given us ample satisfaction. In one case the 6th decimal dilution from the foreign tincture could not produce the desired result. The administration of the 6th decimal dilution from our tincture proved satisfactory. For this reason the preparation and use of the tincture of these homœopathic medicines which are available in India would be the best course that we can adopt.

The action of Nux vomica depends neither on Strychnine, Brucine nor on Igasuric acid. It is due to the combination of all the three. The proof of this assertion is not wanting. Like all drugs, the effect comes from the natural combination.

Clarke says: "The tree from which the *Ignatia* 'beans' are obtained is unknown, but is not doubted to be a *Strychnos*;

the seeds actually contain a larger proportion of *Strychnia* than those of *Nux vomica*. The difference in the character of the two remedies proves the wisdom of Hahnemann's method of studying medicines. If there was nothing more than the chemistry of the drugs to go by *Ignatia* and *Nux vomica* might be used indifferently; with the knowledge that Hahnemann has given us of their characteristic features they are seldom even thought of in connection with the same case."

The difference of action between the tincture of the seed of *Nuxvomica* and that of its bark settles the issue that the action of *Nuxvomica* is not due to *Brucine*. The bark contains more of *Brucine* than *strychnine*.

It has been supposed that "the best time to give *Nux* is in the evening at bed time, that is, well away from the time of its chief aggravations." In India, it is generally administered in the morning and no difficulty has been observed on account of it, though morning is said to be the time when it has its period of aggravation. *Nux vomica* is mostly used in this country for evening fever with constipation. The administration of the medicine suits best in these cases in the morning. *Nux* has the following symptoms: *contractive pain through whole body*; pain in small parts in which he was lying; pain in voluntary muscles worse on neck and limbs and also worse on motion; *renewed soreness in old wounds that had healed*; bruised sensation; *everything makes too strong an impression* (coff.); *takes cold from the slightest draught* (sul., kali c., etc.); oppression of whole body with pain in legs as after a long walk; weakness in morning *after rising greater than in evening on going to bed*; shooting, shaking pains, or jerking, tearing, and drawing pains, with sensation of torpor and of paralytic weakness in parts affected; complaints in back, small of back; something seeming in the back which prevents turning over; pains in limbs and joints as if they had been bruised, worse in morning; pain in vertebrae; sprained pain in scapulae; bruised pain in dorsal muscles on touch; *bruised pain in lumbar region and in knees*; *bruised pain on bending far backward*; *bruised pain in ex-*

tremities in morning, worse in joints and worse the longer he lies, better on rising; bruised pain in joints and shafts of long-bones in morning; bruised feeling in thigh; in muscles of thigh and knees; swelling of veins in arms and hands: pale swelling of hands and fingers; hot and painful swelling of thumb which becomes an abscess at the joint; red swelling of leg, with black painful spots; swelling in back of feet; ulcerative pain in roots of nails on touch.

All these facts disclose that the aggravation of *Nux vomica* is in the morning whereas clinically we find that the evening aggravation of diseases can be checked in many cases by *Nux vomica*. Allen writes: "There is aggravation of all symptoms early in the morning. Aggravation from any mental effort, sometimes worse in open air and from motion, sometimes relief in the house or when at rest, or *vice versa*. There is general relief from unbroken sleep, but aggravation when the sleep is disturbed; the patient is usually very drowsy, early in the evening and wakes very early in the morning, but after falling asleep a second time he wakes finally with all the *Nux* aggravations."

The drowsiness in the evening is a characteristic symptom which serves our purpose best in the administration of the medicine.

Clarke gives a long list of aggravations and ameliorations. They are as follows: "Symptoms are worse in morning; in open air; by motion; by mental exertion. Each of these is a characteristic; a combination of two or three of them may be considered a key-note. Worse in morning is the greatly predominating feature of *Nux*: (The best time to give *Nux* is in the evening at bed time, that is, well away from the time of its chief aggravations). Cough and some other symptoms are worse in night; worse after midnight; worse—3 or 4 A. M. During day, drowsiness. Menses return at full moon. Although *Nux* is sensitive to chill, draught and air, most symptoms being worse by cold, cold water, and by getting wet; still the symptoms generally are worse in dry weather, better

in wet weather. But wet weather makes worse facial neuralgia; and wet, warm weather causes gastric and bilious fever. Warm room and warm covering decreases headache. But warm room causes fainting. Summer heat is insupportable; sunshine makes worse headache. Open air decreases flatulence and asthma and makes worse all other symptoms. Worse in wind. From rest better. Better from lying down; on side. Motion makes worse. Exertion, physical or mental produces aggravation. Amelioration from shaking head. Eating produces aggravation. Milk sours in stomach. When eating: heat in head. Worse from coffee; cold food; cold water; wine. Alcoholic drinks produce aggravation and amelioration. Touch makes worse. By pressure better; but cannot bear tight clothing. Rubbing makes worse. Riding in carriage produces sickness. "Coughing."

According to Clarke, cough and some other symptoms are worse at night. The evening aggravation of *Nux vomica* remains untouched. In Jahr's *Symptomen Codex*, the following symptoms are said to be Characteristic Peculiarities of the medicine: "Many of the symptoms are aggravated or excited by coffee, wine, smoking, watching and mental exertions; also by windy weather. Many of the symptoms appear early in the morning (in bed or after rising), also after dinner. In the evening (8 or 9 o'clock) the pains are increased to an intolerable degree. *Nux* is particularly suitable, if the symptoms are worst early in the morning, particularly if the patient wakes at 3 o'clock in the morning and then, overwhelmed with ideas, falls again into a heavy sleep full of dreams, from which the patient wakes more weary than he was on lying down. The pains which come on by keeping one's self confined in a room, are relieved by a walk in the open air and vice versa, some of the pains are relieved by lying down." The reference of the evening pains though not italicised has received sufficient clinical confirmation.

The cases which have derived benefit are those which form the sequelae in cases of inflammation. The residuary inflammatory

deposit does not pass away. Renewed soreness of old wounds which have already healed up requires its use. The proclivity to cold is a leading guide. Bruised pain in the lumbar region, knees, extremities, joints and long bones may have the necessity of the medicine. The wide range of *Nux vomica* requires a vast field for application. Time alone can show the multifarious uses of the useful drug.

Osmium was first introduced by Hering and the pathogenesis of the metal was introduced in his *Materia Medica* in 1878. Of it Hughes writes, "the workman I have mentioned died of the intense broncho-pneumonia induced by the emanations from *Osmium*. But this action on the air tubes—so far at least as the upper part is concerned—is not local only; for the provers had great hoarseness and cough. Gmelin's experiments on animals show the oxide to cause death in convulsions without signs of inflammation, evidencing an action on the nervous system." It can be said that *Osmium* has another kind of picture besides the nervous affection. The inflammatory character is sufficiently manifested by broncho-pneumonia in workers of the metal.

A description of the nature of the metal is given by Clarke. It is as follows: "*Osmium* is a metal of the *Platinum* group, in association with which it is always found. It is the heaviest of them all and the most refractory, having never been fused. It derives its name (from the Greek *Osmn*, odour) from the pungent odour of the fumes of *Osmic acid*, which are evolved in the process of separating *Platinum* from its ore, and the effects of which have supplied a number of valuable symptoms in cases recorded by J. G. Blackley (C. D. P.). In the arts it is used in the alloy with iridium (*Iridosmium* or *Osmiridium*) for making the tips of gold pen."

Osmium has the following symptoms: Tearing to and fro deep in forehead and in bones of limbs; cutting and pinching pain in limbs; restless; great weakness and prostration; pain in lumbar and sacral regions, extending from scapula to sacrum worse on motion and cough; pulsating stinging on inner side of shoulder joint; pain in middle of humerus, in fingers,

elbow, radius, and bones of fore arm; stabbing in tips of fingers; sudden pain in hip joint as if it would be dislocated, preventing walking; ulcerative pain in ankle; pain in bones of heel; fulness and restlessness in legs and feet, quite unbearable.

It has a close affinity with Iridium. Like that metal it seems to possess the power of arresting suppuration. In that view of their action both of them have a better power to prevent suppuration than Hepar. M. Laboucher of France used Iridium in 4th, Palladium in the 3rd, Platinum in the 2nd, and Osmium in the 1st cent. attenuations.

(To be continued.)

RAT AND PLAGUE.

(Continued from last Number p. 140.)

The most interesting verdict comes from the Report of the Indian Plague Commission. In order to ascertain the infectivity of rats, it was necessary to know the mode in which the plague bacillus effects an entrance into the organism of rats. The first point was to consider the possibility of the infective material effecting an entrance into the organism through small wounds in the skin. The Commissioners observe:

“With regard to the first of these questions, the German plague Commission state that in their experience a mere prick with a plague infected needle suffices to bring about the death of an ordinary rat. The Austrian Plague Commission while noting that the inoculation of small quantities of very virulent cultures is almost always followed by fatal results, record that in isolated instances rats showed no reaction to the inoculation of very considerable quantities of fully virulent cultures. We ourselves (and were dealing with cultures freshly isolated from fatal cases of plague) found that it was in all cases necessary to inoculate a very sensible quantity of plague culture in order to ensure the death of the animal, and in some cases we found evidence of great resisting power on the part of the rats with which we had to deal in Bombay.

“The data which are available with regard to the post mortem appearance of rats do not permit of a final judgment being arrived at as to whether the system is generally invaded in a state of nature through the channel of the skin. In certain proportion of cases buboes are found which seem to indicate cutaneous infection. It has been suggested that rats communicate the infection to each other by means of bites, but the circumstance that the bodies of rats are enveloped in a close covering of hair would seem to afford, at any rate, a large measure of protection against cutaneous wounds. It has been suggested also that the infection may be inoculated into rats by fleas. This question involving as it does the general question of conveyance of plague by insects, will be treated of in a subsequent section of this Chapter.” The second point relates to the possibility of infection through the channel of the alimentary canal. The experiments performed by Drs. Gibson, Simond and Mr. Hankin produced negative results. On the other hand, the German and Austrian Commission find the experiment successful in some cases. The safe conclusion is that this mode of transmission is of a rare nature.”

The third mode of the possibility of the infection being contracted by the channel of the nose and the respiratory tract seems more doubtful than the others. The Plague Commission notwithstanding all negative results catches the last and the least effective way of infection to save themselves from an ugly position.

The part played by insects in the dissemination of plague was put forward by Dr. Simond. Dr. Simond argued as follows: “Firstly, that plague rats are eminently infective when infested with fleas, and that they cease to be infective when they have been deserted by their parasites;

Secondly, that living plague bacilli are found in association with fleas which are taken from plague-infected rats;

Thirdly, that plague can pass from infected rats to other animals which have not come directly in contact with them or with their infected excretions; and Fourthly, that the fleas which infest rats will transfer themselves as parasites to men.”

The Plague Commission does not believe the statements made by Dr. Simond. The conclusion is : "The Hon. Lionel Rothschild, to whom, as having a special knowledge of insect parasites, we, by the advice of Prof. E. Ray Lankester, referred the question for an opinion, thought it possible that such a transference might in exceptional circumstances occur. Professor Gallivallerio, on the other hand, was unsuccessful in his attempt to induce rat fleas to transfer themselves as parasites to men. There would thus appear to be some uncertainty as to whether rat fleas will, as Dr. Simond suggests, freely transfer themselves to men."

Dr. Nuttall performed a series of experiments with regard to the general question of the transference of infection by the agency of insects. His conclusion is that "no experimental evidence can be adduced in support of the theory that suctorial insects play an important part in the transference of bacterial diseases from one animal to another. It will perhaps be appropriate to cite here the following results obtained by Dr. Nuttall in his experiments on plague. Twenty bugs which had sucked the blood of a mouse dying of plague (the blood contained many bacilli) were immediately placed on four mice. None of the mice sickened after being bitten by the infected bugs." Dr. Nuttall has further demonstrated that in the infected bugs the plague bacilli are destroyed in the process of time.

DIRECT INFECTIVITY OF RATS.

Direct infectivity may occur in two ways. (1) From the bite of infected rats. (2) Direct contact of infected rats. The first class of cases are extremely few. A case of this nature came to our observation. At 42-1 Sankaritola East Lane, in a hut, a girl was bitten by a rat on the early morning of the 25th April 1905. For the last fortnight rats were dying in large numbers in that hut. It was not ascertained whether the rat that bit a small spot of the right little finger of the girl was infected with plague. The occurrence took place at about 2 A. M. From 6 A. M. she was feeling unwell. From 10 A. M. the fever was marked. None of the inmates did take any particular care as they were

now and then accustomed to such bites. From 4 p. m. the fever took a serious turn. She was slightly delirious. The right axillary gland became swollen and the left was tender to touch. The girl died on the 28th April at 5 p. m.

The attack of plague on the girl infers that the rat was also infected. For on other occasions, rat-bite could not produce plague.

It will be interesting to note that a plague infected Cuckatoo communicated the disease to a boy. Babu————aged 20, was residing at Chuckerberia Road north, in 1903. His father had plague and the pet Cuckatoo bit one of his fingers during the attack of the disease. The son was wounded by the affected Cuckatoo. The three died of plague.

Instances of direct inoculation are very rare but they happen. These cases of direct infection should be classed among those who were attacked with the disease as the result of post-mortem wound from cases of plague. The Report of the Indian Plague Commission thus says on the direct inoculation: "The case is different where we have to deal with a direct inoculation of infective material by the bites of infected animals. We may refer to a case at Bombay observed by Dr. MacCabe Dallas, where plague is said to have been communicated by a rat bite, and to a similar case reported in detail from Hong-Kong. Incidentally, in connection with the inoculation of plague by the bites of animals we may refer here also to a case in Poona, communicated to us un-officially, where infection is said to have originated in the bite of an infected pet squirrel."

We have heard of plague attacking a dog. How the dog was affected was not known. The animal died within a short time from glandular enlargements of neck and fever.

Of other instances, that is from direct contact of rats, the Indian Plague Commission has considered them in detail. The Report says: "The instances which have been brought to our notice where plague is said to have originated from direct contact with rats are both few and, separately considered, inconclusive. These instances are briefly as follows: (a) Five cases had

come to the knowledge of Dr. Bhal Chandra Krishna, where persons in Bombay had developed plague three or four days after handling dead rats. The first four of these cases occurred during the epidemic of 1896, and particulars with regard to them were not to hand. The fifth was the case of a Parsee lady who lived near Girgaum. 'She was,' said Bhal Chandra Krishna, 'taking out rice for cooking, and a dead rat came to the palm of her hand, and next day she got plague.' The patient was under the witness' treatment, and he believed that she acquired the disease through the injured epidermis of the hand by mere contact with the rat. But it must be remembered that, in addition to the disease being prevalent in the City, the house itself had probably been infested by plague-infected rats. It is therefore, possible that the infection was otherwise acquired than by direct contact with the dead rat in question. (b) Mr. Katrak gave us the following history with regard to the origin of a plague case which came under his observation. He said: 'A rat was found in one of the rooms. The patient, before she got the infection took the rat and threw it out, and then with plain water she scrubbed the ground with her hands. In about six or eight hours she felt a sense of chilliness, then fever began, and she went through the whole course and died.' He had heard of another case in which a porter was reported to have removed two or three dead rats from a house and, 'within five minutes' had a sense of chilliness, and subsequently developed plague. (c) A case occurred at Daman of a young woman placing her foot on a dead rat when she returned to a vacated house. That evening she was attacked by plague. (d) Dr. Godinho gave the instance of his own servant boy who developed plague eight days after playing with a dead rat. The witness believed that the boy could not have otherwise been exposed to infection. (e) Colonel McConaghy, I.M.S., informed us that a young apprentice fitter in the railway workshop at Karachi, on being ordered to remove a dead rat found in one of the drains, swung the rat about his head and played with it. Three days afterwards he was admitted into the Civil Hospital

with plague. There was no plague in the neighbourhood of his house. (f) Major Dimmock, I.M.S., recited the case of a Goanese servant who removed a dead rat from a floor and burnt it. He was attacked with plague four days afterwards. (g) Dr. Simond recounts that at the commencement of the plague epidemic in Bombay a considerable number of dead rats were found one morning in the store rooms of a spinning mill. Of the 20 coolies who were ordered to remove the rats, some 10 contracted plague in the course of the next few days, while the persons who entered the store rooms without handling the rats remained free from infection. Mr. Hankin, to whom the facts were recounted by Mr. Wadia, the owner of the mill in question, gives the number of the coolies attacked as 12.

“ In connection with these cases, where there are colourable grounds for supposing that contact with a plague infected rat may have been instrumental in the communication of the infection to man, there must be taken into account the infinitely more numerous instances in which the handling of dead rats has not resulted in any evil effect. As an instance of what was constantly happening we may cite here the clearing out of granary filled with dead rats. We were told by Professor Muller, in connexion with a particular granary which was cleared by him, that none of his gang of 30 coolies was attacked, in spite of the fact that no shoes were worn and no special precautions against infection were taken. We hear, also, in Dr. Planck's Report on Mahamari in Kumaun of ‘certain children, all of whom have remained well, who, as a matter of pastime cooked and ate one or more of the rats,’ found dead in the course of an outbreak of plague in the village of Bintola.

“ We have, in short, in reviewing all the facts which have come to our knowledge, little reason to suppose that ordinary casual contact with plague-infected rats, dead or alive, is especially liable to convey plague.”

(To be concluded).

EDITOR'S NOTES.

Pancreatitis.

Not every patient suffering with stomach pain, chronic jaundice and emaciation is the victim of gallstones or cancer; chronic pancreatitis may be the offender. The anatomical association of the common bile duct and the pancreatic duct suggests that a case of gallstones may be complicated at any time by a pancreatitis. Acute attacks of gastric pain with intervals of deep-seated pain are associated with inflammations of the pancreas. Nausea and vomiting and belching are common. Jaundice appears with putty stools. Emaciation and cachexia complete a picture that simulates that of a malignant growth. Tenderness in the middle of the epigastrium differentiates the pancreatic inflammation from gall bladder disease. Obstruction to the outflow of the pancreatic juice interferes with digestion, and undigested meat fibers may sometimes be found in the stools.—*North American Journal of Homœopathy*, March, 1905.

The Drinking of Methylated Spirit.

Porson, the famous Greek scholar, who drank whatever was handy, is said to have declared that the spirit from a friend's lamp was one of the most comforting beverages he had tasted. The remains of several mighty men of war, including Lord Nelson, which were placed in spirit of some kind or another for preservation during transport home are known to have arrived in a dry state, the preservative fluid having been drunk on the passage. Curators of museums have sometimes had a difficulty in keeping their specimens owing to the same depraved taste in certain attendants. The drinking of methylated spirit seems to be prevalent among the poorer classes in the Isle of Man. The House of Keys has under consideration a Bill to regulate the sale of this unseductive intoxicant. The principle was adopted, as in England, of prohibiting the sale in ordinary of non-mineralized spirit.—*Brit. Med. Journ.*, May 6, 1905.

Malaria in Formosa.

N. Mine, quoted in the *British Medical Journal* of 27th August 1904, states that the temperature of Formosa varies between 55° and

82° F. The Island is well wooded ; the great rivers often overflow their banks ; swamps, ponds and ditches abound, and the rice fields are constantly covered with water. Malaria is endemic in the island, and the natives contract it almost without exception. Three varieties of mosquitoes are found in the island to carry the parasite. For the protection of the Japanese soldiers in the island, gauze nets were fastened over all the windows of their living places, and the bed rooms were fumigated, and no one was allowed to be out between sunset and sunrise, unless he wore a gauze veil and gloves. During the day time no protection was attempted. The result was most striking. In three years, the death-rate from Malaria, which in the years 1897 to 1900 varied between 19 and 20 per cent., was reduced to 0·7 per cent.

Mr. Brodrick on Plague in India.

In answer to Mr. Herbert Roberts, the present Secretary of State for India made a statement the other day in the House of Commons from which we learn, with reference to the fearful mortality from that fell disease (252, 567 deaths during the months of January and February of the current year) that he had been in communication with Lord Curzon as to whether anything could be done to check the present deplorable loss of life. Mr. Brodrick added, "It had been decided to send out a scientific expedition to make a thorough investigation into the origin and cause of plague, and that the Royal Society and the Lister Institute had undertaken the direction of the inquiry, and arrangements for starting it had been made." The Committee appointed for this work consist of Surgeon General Branfoot as chairman, Sir Michael Foster, Dr. J. Rose Bradford (representing the Royal Society), Colonel David Bruce and Dr. C. J. Martin (Lister Institute), as members, and Dr. Boycott as Secretary. Dr. Martin has already arrived in India. We hear that two bacteriologists will be sent out to India in a short time, and that the laboratory work will be done in the Pasteur Institute at Kasauli.

The Charaka Club.

We gather from the *British Medical Journal* of 1st April 1905, that about seven years ago the members of the medical profession in New York interested in the literary, artistic, and historical aspects of

medicine, established a medical society, which they have called the Charak Club, after the name of the author of the oldest extant work on Hindu Medicine, that Dr. William Osler, the former Professor of Medicine in Johns Hopkins University at Baltimore, and now Regius Professor of Medicine at Oxford, was a member of this club, and that on the 5th of March last the club gave a dinner to Dr. Osler at the time of his departure from the United States to England. The menu was in the form of a small pamphlet entitled *Folia of the Charaka Club*, having on its title page portraits of Charaka and "Baba" Osler side by side, with the subtitle, "A Record of Things once said (and never regretted) by Dr. William Osler." Dr. Dana, who was in the chair, showed a series of portraits illustrating the reincarnations of Osler from Charaka down through Galen, Avicenna, Nostradamus and others to Dr. Dover, buccaneer. Towards the end of the ceremony the chairman introduced Dr. Weir Mitchell as "the greatest of the American men of medicine and men of letters," and an old friend of Dr. Osler. May Professor Osler be spared to publish a work on Hindu Medicine, for Oxford will doubtless supply him with plenty of materials for such a work.

The Diagnosis of Pancreatic Diseases.

John C. Hemmeter (*Amer. Med.*, March 11th) fully considers the advances in the physiology of the pancreas and their application to the diagnosis of pancreatic disease. He believes that the effort to determine the degree to which protolysis is interfered with is rendered futile by the presence of erepsin, secreted in the intestinal juice, and which can break down proteids very rapidly after they are once attacked by gastric juice. Defective fat digestion as a gauge for pancreatic insufficiency is equally disappointing. Nevertheless, he believes that great aid can be obtained from the method of Adolph Schwidt. This is based upon the physiological fact that only gastric juice can digest connective tissue (collagen) and only pancreatic juice can digest the nuclear substance of meat fibre. Hence the presence of remnants of undigested connective tissue in the faeces indicates insufficiency or absence of gastric secretion and the presence of nuclei in the cells of meat fibres points to insufficient pancreatic secretion. Hemmeter tested the stools of two patients, one suffering from pancreatic cyst, comprising the duct of Wirsung and the other from

a stenosis of the duct caused by an old pericholecystitis. In both cases the stools contained muscle fibres, showing well-preserved nuclei.—*Brit. Med. Journ.*, April 15, 1905.

Cobra Venom and Proteid Metabolism.

Dr. James Scott, in a paper recently read before the Royal Society, has called attention to the fact that although much valuable work has been done upon the physiological action of cobra venom, no observations of its effects upon the metabolism have hitherto been recorded. In the endeavour to fill up this gap in our knowledge, Dr. Scott has carried out a research upon proteid metabolism in dogs injected subcutaneously with sub-lethal, and in some cases lethal, doses of cobra venom, after having first been brought into a condition of nitrogenous equilibrium. He found that, in spite of a well-marked local reaction, practically no change was induced in the rate of proteid metabolism by the administration of the venom. There was a slight decrease in the proportion of urea nitrogen; but this was quite insignificant when compared with that produced by diphtheria toxins and various other drugs. There was also a slight rise in the proportion both of ammonia nitrogen and nitrogen in purin bodies, whilst the nitrogen in other compounds showed no constant change. The change in the P_2O_5 excreted was not constant, but in two experiments there was a slight rise. The general result of the research therefore affords evidence that the change produced in the proteid metabolism is small. Such as it is, it is in the direction of decreased elaboration of urea and increase in the proportion of nitrogen excreted as ammonia. These are indications, in Dr. Scott's opinion, of a slight toxic action on the hepatic metabolism rather than a general action on the proteid changes. He, therefore, regards his results as tending to confirm the view that the poison of cobra venom acts chiefly upon the nervous system.—*Brit. Med. Journ.*, May 6, 1905.

Plague and the Buddhist Scriptures. .

INTERESTING HISTORICAL FACTS.

A correspondent writes as follows to the *Rangoon Gazette*:—In India plague was known very early, and its appearance at various

times and places is mentioned in the Buddhist Scriptures and in their Commentaries. From the course it then followed there can be but little doubt that the disease mentioned was the same as what we now call plague. The *Friend of Burma* contains an interesting letter on this subject by a learned hpoongyi of Rangoon known as U Candima. His letter is in answer to a query by another hpoongyi, U Vugandhara and several other influential Burmans as to whether the plague is mentioned in the Pitakas and the Commentaries, what kind of sickness it is and whether it can be cured. We have verified the quotations of Candima and found them correct. No doubt many more quotations might be produced of the Commentaries and they were carefully looked through. One quotation at least is from a book which has been proved by the best scholars to have been in existence before the time of Asoka, the Emperor, that is, before the third century before Christ the *Mapavagga*. The others are taken from works written or compiled during the fifth century A. D.

The Pali name of the disease is "Ahivataroga," that is literally the "Snake wind disease," but we prefer the Sanskrit Etymology, with which U. Candima appears not to be acquainted "Ahiz" according to native Sanskrit lexicographers means "Striking or destroying everywhere."

THE CAUSE OF PROPAGATION.

As far back as the fifth century A. D. and very probably much earlier the Indians and Sinhalese asserted, just as Western physicians now do, that diseases were propagated by mosquitoes and flies and that plague in particular was spread by flies and rats. We read in the *Dhammapadattakatha* (II 2): "When plague occurs flies first die, and then all animals, even crows." A sub-commentary on the "Mahavagga" above mentioned gives in order the names of the animals they thought to be attacked before men: "When the Ahiyata pestilence arises flies die first, then rats, then fowls, pigs follow and cows, after that the servants die, then the masters of the house. Here, flies or mosquitoes come first, then the rats. It is worthy of remark that slaves and servants are said to fall victims before their masters, probably, it must be understood, from their negligence and filth. It is what doubtless is happening now, too. It may be still remembered that in India fowls and cows died from the disease. The Indians did not know of any remedy against the fell disease. Flight, they thought, was the only remedy. In "Mahavagga (L. 51) it is said that a whole family died of plague only two boys being left; in this connection the compilers add that "he

who breaks through the roof of the house or through the wall (that is who flee away) may be saved." The fear of contamination was as great then as it is now, for the compilers go on to say that when the two boys that were left ran away, they met bhikkhus (Buddhist priests) but the bhikkhus terrified, drove them away, and the boys, who were not yet fifteen, cried.

CAUSE OF THE DISEASE.

From what precedes and from the statement that flies and rats were first to die, that the only remedy was in flight, that the disease was in the air,—that is caused by baneful gases and emanations from the ground—in a word that the disease was caused by filth that people not over careful and habitually dirty, such as slaves and servants died first, it may be pretty safely concluded that the "Ahivata roga," the "Maribyadi" and "Mari" of old Pali and Sanskrit writers was the plague.—*Indian Mirror*, April 29, 1905.

Plague in Calcutta.

DESTRUCTION OF RATS.

Chamber of Commerce Views.

The Secretary of the Bengal Chamber of Commerce has written to the Secretary, Government of Bengal, Municipal Department, Darjeeling, as follows:—

The attention of the Committee of the Bengal Chamber of Commerce has been recently drawn to the good effects which followed a systematic extermination of rats as a means of prevention of plague, notably in Sydney, Australia, and, nearer home, at the East Indian Railway Company's and the Bengal Coal Company's Collieries at Giridih. The Committee understand that experimental measures in this direction are about to be instituted in Calcutta by the Special Plague Department under the direction of the Chairman of the Corporation, and they direct me to intimate that the introduction of any such measures would have their strong support. They feel, however, that in order to be of real use in preventing plague epidemics such as those from which the city has suffered, severely in times past and is now suffering, the efforts made for the extermination of rats should not only be wide-spread and cover every district in the city, but should be persistent throughout the year and not merely at the times when plague is prevalent. The Committee believe it is an

admitted fact that an outbreak of plague among rats invariably precedes an outbreak of the same disease among human beings, and it therefore follows that, if rats could be more or less completely exterminated, plague epidemics would in all probability be prevented.

As the Plague Department is under the authority of the Government of Bengal, though controlled officially by the Chairman of the Corporation, I am instructed to urge in the interest both of the city and the port the necessity of Government dealing with this matter in a comprehensive and determined manner. It appears to the Committee that public funds could not be better employed than in providing the necessary organisation and appliances for the wholesale destruction of rats in the various quarters of the city, and the Committee trust that the subject will receive the urgent and serious attention of Government.

I am instructed to enclose copy of a Circular issued by the Agent of the East Indian Railway which details the measures which have been successfully employed at the Giridih Collieries, and the Committee agree that of all the various schemes which have been put into operation for the eradication of plague the most successful would appear to be those which have for their object the extermination of rats.

The following is the enclosure (copy of circular referred to):—

PRECAUTION AGAINST PLAGUE.

Of the various schemes that have been put into the operation for the eradication of plague the most successful appears to be that which has for its object the extermination of rats, and the introduction of this process at the Company's Collieries. Giridih having been attended with the most gratifying results, I desire that it may be extended elsewhere as an experimented measure at some selected station in each district where plague is prevalent.

The following is a summary of the measures adopted at Giridih and are those which should be adopted as far as local conditions allow:—

1. The rats are brought in the cages in which they are caught twice a day, morning and evening.
2. The cages containing the rats are then completely immersed in water and perchloride of mercury kept in a wooden cask. This drowns the rats and disinfects the cages. This operation is done near a large fire—a boiler furnace for preference being always at hand on the collieries.

3. Rough wooden boxes are provided of sufficient size to contain up to 25 rats. One of these boxes is placed on a shovel in front of the fire. A little jute is placed in the box, for the fleas to nestle on, as it has been found that the fleas are more difficult to drown than the rats are and as they leave the cold body of the drowned rat and to prevent them hopping on to the persons handling the cages, jute is placed there to attract them.

4. The cages are then taken out of the perchloride solution. The door at one end of the cage is opened, and the rats dropped into the wooden box, and with as little delay as possible the box containing the dead rats and fleas is thrown into the fire.

5. The cage is then baited and handed over to be used again.

6. Handling of the rats is strictly prohibited.

The main precaution to be observed is to ensure that both rats and their fleas shall be promptly destroyed on their submersion in the perchloride of mercury bath and in carrying out the proposed experiments, the local District Traffic Officers and others concerned should act in co-operation with the District Medical Officers.

The Controller of Stores will supply the necessary rat traps.—
Bengalee, Friday April 28, 1905.

Oil in Tobacco.

We have received from the Scottish Anti-tobacco Society a communication in which it is suggested by Mr. Rutherford Hill that the irritating effects of tobacco smoke may be largely due to the combustion of oil. Tobacco, of course, contains a natural oil but for the purpose of manufacture the practice of adding oil is on the increase, as was shown in the last report of the principal chemist of the Government laboratory. The oil used is stated to be best Florence oil, which on imperfect combustion would yield the intensely acrid and irritating vapour, acrolein. While we quite agree that the formation of acrolein in this way would be a contributory factor to the irritating property of tobacco smoke, yet it must be borne in mind that the products of the destructive distillation of the tobacco leaf, even free from added oil, contain a great number of substances of a similarly acrid character. Such, for instance, are pyridine, furfural, butyric and valeric acid, ammonia compounds, and so forth. The addition of glycerine which is also practised would again give rise to the formation of acrolein, while glucose would give irritating

products on partial combustion. The proportion of added oil, glycerine, or glucose is, however, in most cases small and probably insignificant having regard to the proportion of tobacco smoked. We object, however, to the principle in general of adding any foreign substance whatever to tobacco and the less tampering there is with the leaf the better and the less injurious is it likely to be. But it seems to us that we do not require to resort to an enumeration of the various constituents, good or bad, of tobacco to prove that smoking by juveniles is a pernicious practice. Any movement to suppress the habit amongst children has our complete approval.—*Lancet*, April 22, 1905.

The Alimentary Value of Sugar in Tuberculosis.

In a contribution to the Société de Thérapeutique René Layfer discusses the value of sugar in the dietary of tuberculous patients. Sugar being easy to take and to assimilate and having a high calorific value might, it was thought, replace a part of the albuminoids in the diet without lowering the weight of the patient. Two cases were taken in which the diet consisted of 300 grammes of raw meat and two grammes of total albumin per kilogramme. The meat was reduced to 150 grammes, equivalent to 1-2 grammes of albumin per kilogramme. At the end of 12 days of this fare increase of weight had ceased in one case and a loss in weight of 300 grammes had occurred in the other. Each patient was then supplied with 70 grammes of sugar in addition and a gain in weight was experienced. In a general way tuberculous patients tolerate for a long time from 50 to 90 grammes of sugar daily. Thus a gain in weight of from 20 to 90 grammes per day was obtained by simply adding to the patient's ordinary diet from six to ten pieces of sugar daily, administered in a little milk after each meal. But sugar was found to be particularly valuable as an addition to a strict milk diet, yielding quite a perceptible increase in weight, as shown by a typical case. A patient who through a loathing of food was taking only from two to two and a half litres of milk a day and had become quite emaciated regained his usual weight in 45 days by adding to the milk diet 200 grammes of sugar daily. It is particularly with milk that large quantities of sugar are tolerated, either dissolved in the milk or dissolved in water and taken after each dose of milk. The writer mentions six other cases in which the diet consisted of three litres of milk

a day and from 50 to 200 grammes of sugar; in each case a gain in weight varying from 15 to 75 grammes a day was experienced and the diet was tolerated by the patient.—*Lancet*, April 29, 1905.

The Mortality from Plague in India.

In the *Lancet* of March 25th p. 807, we commented upon the appalling mortality from plague, a disease which is at present scourging India, and gave it as our opinion that the urgency of the situation has not as yet been fully recognised. At the Comitia of the Royal College of Physicians of London held on April 17th the following motion was proposed by Dr. Norman Moore, seconded by Sir Dyce Duckworth, and supported by Dr. J. F. Payne—

That in view of the constantly increasing mortality from plague in India since 1896 and of the recorded mortality of 252,000 in January and February of the present year a committee be appointed to report to the College on the desirability of the College addressing His Majesty's Government on the subject.

The motion was carried and the nomination of the members of the committee was left in the hands of the President. It is true that the prevention of plague in an oriental country presents great difficulties. The poorer classes of India have but little reserve of strength, caste prejudice and religious difficulties stand in the way of such hygienic measures as notification, preventive inoculation, and proper sanitation, while the unfortunate infection of a batch of plague serum with the germs of tetanus which occurred but recently has naturally caused a dislike to this method of prevention. Moreover, the tendency of the oriental races when afflicted by illness is not merely to take no measures for treatment but also to refrain from making any mental effort to get well. This they would consider impious and it is not so very long ago since we in this country viewed cholera in the same way as a divine punishment, so that many persons considered that to take hygienic measures was fighting against God. We have now learned better and have come to agree with the opinion of Salvian concerning the conquest of Rome by the Goths, that our evils are due to our vices. It is not nowadays a characteristic of the inhabitants of these islands to sit with folded hands and not to do their utmost to combat difficulties. We trust that the committee to be appointed will strongly recommend the Royal College of Physicians of London to make urgent representations to the Government and to assist our rulers in every possible way to do their utmost to remove what we must stigmatise as a blot upon our administration of the chief part of our eastern empire.—*Lancet*, April 29, 1905.

CLINICAL RECORD.

Indian.

A CASE OF ERYSIPELAS.

By Dr. Hem Chandra Ray Chaudhuri, L.M.S.

T. _____, a child of about two years had fever and convulsion on the 12th March, 1905. He had a pustular eruption in the left leg near the shin of the tibia and the portion of the leg appeared much inflamed. Redness was limited to a circumscribed spot round the pustule. The convulsions were frequent, sometimes hardly without any interval. *Bell.* 30 centesimal globules were administered. Belladonna having failed, *Cicuta* 3 decimal globules were given. The convulsions gradually ceased.

13th March. He had 101 F. in the morning. *Aco.* 1 dec. globules. In the evening the temperature rose to 103. It could then be known that the inflammation was spreading up and down the leg, with swelling and tension.

14th March. Temperature in the morning 101. *Bell.* 6 dec. globules. The evening temperature was 103.

15th March. The erysipelalous inflammation was spreading up and down. It had reached above the knee and down the ankle. By careful observation, minute pustules, each about the size of a pin's head, could be detected. They were confined to the leg.

Temperature in the morning 100. *Rhus tox* 30 cent. globules. In the evening the fever rose to 101.

16th March. The minute pustular eruptions were disappearing. The leg was less inflamed than before. From the kneejoint the erysipelalous inflammation assumed the cutaneous character leaving aside the pustular nature. The inflammation was extending upward and reached almost the buttocks. The morning temperature was 99. *Rhus tox* 30 cent. globules were continued. Evening temperature 103.

17th March. The erysipelas invaded a portion of the buttocks, the leg was evidently better. Temperature in the morning 101. *Merc. sol.* 12 dec. globules. Evening temperature 101.

18th March. The erysipelalous inflammation did not extend any further up or down. The effect of Mercurius in obstructing the spread of the inflammation was most conspicuous. The morning temperature was 99. *Merc. sol.* 12 dec. globules. The evening temperature was also 99.

19th March. The child was evidently doing well. Temperature in the morning 98·4. *Merc. sol.* 12 dec. globules. The skin from the leg and thigh were peeling off.

20th March. A large covering of the pustule came off. *Merc. sol.* 12 dec. globules. The medicine was continued for another three or four days and was then discontinued.

Remarks.

The case of erysipelas is instructive for various reasons. The change of character from the pustular to the cutaneous variety is a marked feature of the case. *Rhus tox* could only change its original nature but could not prevent its spread. *Merc. sol.* instantly prevented its progress. The last medicine has rarely been used in erysipelas. This case has proved the efficacy of the medicine in the disease. It may be observed that the parents had no syphilitic history among themselves and it was wanting in their few previous generations. In this view of the fact, the efficacy of the medicine in non-syphilitic erysipelas has produced so far successful result.

Foreign.

CATARRH OF THE BLADDER.

By *Eli G. Jones, M. D.*

Several years ago I was called to the southern part of this State to see a middle aged man suffering with catarrh of the bladder. The physician whom I met in consultation had used many remedies to try and relieve the distress of the patient. He finally had to use the catheter to draw off the water every few hours, and the pain at such times was so great that the neighbours could hear him scream with the pain. The discharge from the bladder was mixed with blood and mucus, with a *burning* pain extending down from the bladder to the end of the penis. I told him I thought I could help him, and in consultation with his physician gave him my idea of the treatment of the case. To relieve the most pressing symptoms I prescribed *Solidago virga-aurea* ix, third dilution, five drops once in two hours; in twenty-four hours he could pass water without the catheter. For the constant discharge from the bladder I gave him Tr. *Chimaphila umb* θ , ten drops once in three hours. In cases of this kind it is well to remember that the greater the amount of *catarrhal* discharge the more certain the indications for the *Chimaphila*. As his nervous

system was pretty well unstrung with the pain. I gave him *Kali phos.* 3x-15 grains in a goblet of water, teaspoonful once an hour, till his nerves were calmer. This plan of treatment was strictly followed out until the patient was discharged cured.

I have used the *Solidago* (golden rod) in cases where it is *indicated* and it is one of our *best* remedies.—*Homœopathic Recorder*, March 15, 1905.

SOME CASES OF RHEUMATISM.

By Dr. Mossa, Stuttgart.

Translated for the Homœopathic Recorder from *Allg. Hom. Zeit.*

GNAPHALIUM.

A servant girl, twenty-nine years of age, had suffered much ever since her ninth year from rheumatism. The pain roved about in all the joints, sometimes in the fingers which are red and swollen, then again in the shoulders or the loins. She cannot sleep at night. The joints are stiff and sore and hard to move. The mother-tincture of *Gnaphalium*, ten drops a week, continued for two months, brought remarkable relief. In the course of two months she was freed from all pains, except a slight aching in the back (Cartier). *Gnaphalium* is generally most useful in non-inflammatory rheumatism, and still more in nervous rheumatism and in gouty myalgia.

KALMIA LATIFOLIA.

A school boy, ten years of age, had an attack of rheumatic fever, lasting thirteen days. Acute pains in the shoulder-joints and in the upper arm, jumping from one side to the other; penetrating lancinations in the cardiac region, worse at night; thirst for large quantities of water; great restlessness. Pains darting through the intercostal muscles in the left side, worse while breathing; the tongue, red in the middle, with a red triangular spot on the tip; the joints neither reddened nor swollen. Temperature higher, respiration 48-60; the cardiac pains worst while lying down. The boy had had a similar attack the year before, which had been less painful, indeed, but which under allopathic treatment had lasted six weeks and a half, and had left behind a deficiency of the valves. On giving him *Kalmia latifolia*, the pain disappeared in two days.

MEDORRHIN.

This remedy is according to J. H. Allen most effective in rheumatism after gonorrhœa, especially when the small joints are affected. The gonorrhœa in such cases has often been quickly repressed. Whenever in rheumatism the joints, especially those of the fingers and toes, or the knee joint, are swollen we should think of *Medorrhin*; for there is usually a specific infection present. This remedy has cured gouty exudations, extending to the whole of the body. The patients in such cases have hardly any use of the joints

affected (similarly as *Rhus* in muscular rheumatism). It is worse in cold weather, better when it is warm. Winter is always the worst season with such patients, especially when it is cold and moist. They complain of heaviness of the limbs while walking, as if the limbs would refuse their service.

In *Arthritis deformans*, this crux for patients and physicians, Dr. Bonino has found the best results from a weekly alternation of *Causticum* and *Thuja*. In pronounced gout *Urtica urens* has been most serviceable.—*Homœopathic Recorder*, January 15, 1905.

PROLAPSUS OF VAGINA CURED BY THUJA.

By Dr. W. H. Wheeler.

About five months ago I was consulted in regard to a case of prolapsus of the vagina in a woman seventy-seven years old and told that one of the best homœopathic and Hahnemannian physicians in the country had advised a surgical operation, saying that she knew of no internal remedy which would be likely to help the case. The prolapsus had already existed for at least a year and was steadily getting more and more troublesome, together with increasing weakness and marked irritability in one who naturally was one of the kindest of women. But having an intense antipathy to needless surgery, and counting surgery always needless until careful study of all possible clues has proved beyond a doubt that no other remedy is possible, I asked the privilege of going over the case to see if somewhere in our *Materia Medica* a vaginal tonic could not be found which would touch the case.

As so often happens in such cases, I soon discovered that in the case as it now stood there were no clues; but a very careful study of the lady's past life and family history brought out the fact that she had often been helped for a while by *Pulsatilla* and *Silicea*, though neither of these seemed to have any real control over the prolapsus. But *Thuja* is complementary to both of these: in fact, is probably *the true chronic of Pulsatilla three times out of four*, so I devoted myself to a study of some of the more rare and unusual symptoms of *Thuja*, and sending my patient *by mail* a list of seventy-nine of these I soon got conclusive proof that all through her past life a thuja vein had run, for she had had quite a number of its rarest and most distinctive symptoms. So I advised a trial dose of *Thuja* 1000 to see if medicine could do anything for the case. This was Oct. 15, 1904. As is so often the case with *Thuja* when it does its finest curative work, the initial aggravation after taking this one dose was very severe, actually putting the dear lady to bed. But then came the relief. She began to feel stronger, and the prolapsus gradually became less and less and soon wholly ceased. Her irritability also became a thing of the past, and for four whole months she felt better than she had for years, in spite of slowly advancing old age and a very trying winter climate. At the end of these four months some of the symptoms and a renewed tendency to prolapsus

showed itself, and I have just advised a second dose of *Thuja*; but that in a woman seventy-seven *Thuja* should have given such marked relief for four solid months certainly shows that it has a marked affinity for prolapsus vaginae in so-called *Pulsatilla* women, which is well worth keeping in mind.

To show how marked and many-sided the improvement has been I will quote a part of the lady's last letter: she writes, "Till the last few days I have not had to lie down as often as I used to, have had but little backache, have been largely free from coughs which used to trouble me a good deal and have had only one attack of grippe this winter, and that much milder than usual; my knees and ankles do not feel cold as they used to do before [one of her most persistent symptoms formerly]. I do not get tired when working, as I used to do, and am able to do a good many hours' work each day." To all of which her daughter adds, "that she has also been her old, sweet self once more, without the strange irritability and temper fits which were formerly beginning to trouble her so much, and make it so hard to keep a servant girl." Evidently *Thuja* has helped, and is going to help still more; but this is enough to set many an interested reader to observing for himself. Think of it as one of the commonest chronics of *Puls.*, ALWAYS EXPECT A RATHER SEVERE AGGRAVATION EVERY TIME YOU USE IT, and tell your patient to expect it, and except in very urgent cases like this do not begin higher than the 30th for chronic troubles, and I am sure you will soon learn to love it almost as much as I do, for it has saved some of my dearest friends and is saving others from sufferings almost as old as Noah's ark; for though it works very slow it works wondrous deep. Of course, the 30th is slower than the 1000th would be, but the curative aggravation is also less. In fact, one young doctor who needed it, turning up her nose at 30ths, took the c.m. and was almost frantic, so sharp was her aggravation. But if you wish to get really fine results be patient and don't repeat until an unmistakably serious relapse of *at least five days' duration* calls for it, for some of its later curative action is even more cheering than the relief and uplift which it gives when first taken, two to four months seeming to be the time that a single dose of the thirtieth can run WITH STEADY IMPROVEMENT and only a lot of minor annoyances to show that the work is not mere palliation but cure, melancholia slowly changing to mere neurasthenia, insanity slowly changing to mere restlessness, despair to mere intermittent blues, etc.

And now just one more hint that may save some one much worry. It has wonderful power over dropsical swelling of the feet of several weeks' duration in some mild *Pulsatilla* women, when the dropsy is probably due to mere weakness rather than heart disease in its graver forms, though over true heart disease it seems to have great power in some cases. But dropsy due to weakness it sometimes cures like magic. I do not find this symptom reported in our repertories; but Allen's Cyclopædia (Symptom 2714) tells us that in the case of one prover it persisted for ten days.—*Homœopathic Recorder*, March 15, 1905.

Gleanings from Contemporary Literature.

THERMOTAXIS AND NERVOUS INFLUENCES IN THE PRODUCTION OF FEVER.

BY THEO. J. JACQUEMIN, M.D., UNION HILL, N. J.

A most remarkable instance of a self-adopting mechanism is the faculty possessed by our organism to maintain average temperature under all circumstances of external heat and cold, of torrid and arctic zones, of summer and winter, of sunshine and darkness.

The sensations of heat and cold are no measure of the bodily temperature, not more so than the number of pulsations or respirations can give a correct idea of the body's heat: this can only be given by the thermometer, the introduction of which by Wunderlich, has constituted one of the greatest achievements in clinical medicine.

The mechanism by which the body's temperature is kept uniform, is a co-operation of a number of factors. It is an equation of which the two sides are the amount of heat produced in the organism and the amount of heat dissipated.

In cold weather, warm clothing, fires and contraction of the superficial blood vessels limit the loss of heat; there is also an *increased production of heat* in the way of physical exertion, and through more active circulation in all the internal organs, especially brain and liver, their greater functional activity being attended with a large amount of heat by metabolic combustion. When it comes to be a large *adaptation to great solar heat*, it is mostly in the way of regulating the heat lost. The vessels of the skin are dilated and muscular elements relaxed; perspiration flows and the evaporation of the sweat consumes constantly heat. Brain functions and digestion run low and fatty substances, so readily shared in during cold weather, partaken of most sparingly. This conservative adaptation is controlled by the central nervous system.

The vasomotor nervous mechanism is an integral part of this nervous control of the body temperature. But physiologic experimentation as well as clinical evidence go to show that there are still *higher* and more *commanding* centres in the nervous system than those inducing the vasomotor effects and to which we shall refer later on.

The internal heat of the human body is from 98° to 99° Fahrenheit, and the *healthy range* in different individuals or in the same individual at various periods of life, in various circumstances of exercise and repose, sleeping and walking, is not more than a degree and a half below or above the mean.

This statement includes the fact that our organism is not regulated in such absolute way, as to maintain always a "*constant temperature*," inasmuch as it is found that in a person of normal condition, living in a room of unchangeable temperature, if a thermometer be placed in an internal organ, it indicates regular oscillations of one degree and 8-10ths in the twenty-four hours; but our organism is *capable of automatically preventing* variations of more than 9-10ths of a degree above or below the standard temperature, which we call practically constant. Our body is a thermostat more flexible, it is true, but far more sensitive and complicated than those constructed for our laboratories and other industrial purposes.

An elevation of the internal temperature moderates combustion; and a lowering of our bodily heat has the effect of starting up the furnace. But what our thermostats in industrial lines are not capable of doing our body does: when it gets heated, and cannot moderate the source of the heat, it increases the amount of heat that is lost; and when it is

cooled off, it checks the waste at the same time as the combustion is made more active. Furthermore, this double method of regulating receipt and expenditure of caloric, becomes active when the body is merely threatened with a disturbing influence in consequence of a change of temperature taking place in the ambient medium, which might have a tendency of making the organism hot or cold. The *thermo regulation* or *thermotaxis* is, therefore, both *curative* and *prophylactic*.

The temperature of the exterior air brings to our cutaneous nerves a sensation inviting us to cover or uncover ourselves, but especially determines unconscious reflexes in the nature of automatic body defences. Amongst those reflexes some restrain or actuate heat production by increased metabolism or lowering of vital processes, as the case may be, others bring into action or put a curb on dispersion of heat.

External cold increases production of Co^2 and urea, intense cold causes shivering and muscular tremor, both causing internal combustion and more internal heat: On the other hand, external cold brings about a spasm of the superficial capillaries, less blood is cooled off at the skin surface and cutaneous evaporation is suppressed. These two varieties of reflex actions answer admirably the purpose of protecting the organism against the deleterious influence of *external cold*.

Unfortunately, the reflexes are less powerful to protect us against external heat. When the exterior air gets warm, interstitial combustion becomes less active, the superficial blood vessels become dilated, circulation and respiration become accelerated, diaphoresis is established and the blood carried to the surface in greater quantities is more quickly cooled by the contact with the air. More particularly, the blood loses heat by pulmonary and cutaneous evaporation, and this loss is sufficient to prevent the body from getting heated, even if the exterior air is warmer than the body; but, *let the air be warm and moist*, the evaporation cannot take place and the result of the conflict between heat and the heat-regulating powers is reversed: increased circulation and respiration still further heat the blood, and, unfortunately too often go to illustrate the shortcomings of thermotaxis in that part of its mechanism that is to protect us against external heat. The external heat under the stated circumstances becomes internal heat, and this brings us up to the study of the defences set by the organism for the protection of normal temperature against *internal cold and internal heat*.

As far as both of these agencies are concerned, the reflexes have nothing whatever to do with defending us against them.

Professor Richet, of the Paris medical faculty, by most thoroughgoing physiological experiments, has demonstrated that the central temperature of the body must fall as low as 93° F. before chills and muscular tremor are induced by central nervous agency. Carbonic acid increases in quantity and the temperature rises muscular contraction coming to the aid of increased metabolic combustion. Under these circumstances, the cutting of the spinal cord suppresses the chill and tremor in the trunk and the extremities, while it persists in the face: hence, *the central cold alone* is responsible for the chill which is essentially induced by the heat-producing centres of the encephalon. These centres are located in the corpus striatum and the pons varolii. Not only does clinical medicine corroborate these findings by Professor Richet, but they are substantiated by the results obtained by other investigators like Hale White, Jacobson and Goodhart.

Internal heat brings into play the central mechanism of heat-dissipation or thermolysis: Warm vapor or water baths, warm air at the exact temperature of the body, but saturated with humidity produce a rapid elevation of internal and central heat, and as a consequence, the heart

is accelerated, more blood is brought to the surface of the pulmonary vesicles and to the integuments, the respiration becomes more active and we have a phenomenon properly called "thermic dyspnea." This dyspnea is due to the heating of the thermolytic centres and immediately an abundant diaphoresis sets in as a consequence of the excitation by the warmer blood of the respective centres situated in the cord and the medulla oblongata.

Now, then, besides a reflex production and dissipation of heat, we have to deal with a thermogenesis and thermolysis of central nervous origin. This, however, is not all: Physiologists of to-day connect these centres with a third one, the heat-regulating or thermostatic centre, which has the all-important function of the controlling heat-production, and heat-loss, in such manner that the bodily temperature may remain equable under normal conditions. This centre is located by the authorities in the cortex of the encephalon.

Thus far we have seen that reflexes protect us very well against external cold, while they are very inadequate as far as peripheric heat stimulation is concerned; we find on the other hand, that the central temperature must be lowered five degrees F. before the thermogenetic centre induces a warming chill, while an elevation of internal heat by vapor bath, for instance, is sufficient to induce a cooling perspiration as soon as it reaches 3.5 of a degree F. average temperature.

It would be erroneous to admit that only those influences which we have quoted now play a role in thermic functions of the organism. There are to be considered all those agencies, chemical and bio-chemical, which, circulating in the blood, affect variously the thermic centres.

The marvellous mechanism of heat regulation shares, like all parts of our wonderful organism in the fragilities to which human flesh is heir.

There are so many ways, functional and organic, by which the automatic centres of heat-production and dissipation are influenced, reflex modifications are induced by so numerous changes in our surroundings, ranging from unusual dry and moist cold to extreme dry and moist heat; there are so many chemical agents, toxius, as well as alkaloids, which by their admixture to the blood circulating through the nervous centres leave their functional impress, that there cannot be any wondering at the statement that the nervous mechanism to which we owe our average body temperature, constantly the recipient of noxious influences, the constant and successful warding off which is the price for undisturbed health and well-being of the individual.

Such being the case, is it not evident that we may trace a considerable part of the illness and mortality of the globe to a marked and conspicuous failure of the thermotaxic centre its adaptation to external and internal, physical and chemical, circumstances?

It is with good reason that the poet asks,

*"But errs not nature from its gracious ends,
From burning suns when livid death descends?"*

Undoubtedly the heat-stroke is the direct result of an upset or a disintegration of the thermotaxic centre. Either the disorder is shown in sudden depression of the heart's action, among soldiers marching in the sun, or the effect of atmospheric heat and humidity is a state of venous engorgement, thermic dyspnea, indicating a profound vasomotor paralysis, ending in death by asphyxia or finally, the heat stroke leads to an attack of thermic fever coming on a few hours after the exposure, having a prodromal stage of malaise and a rise of bodily heat to 108° or even 110° F. with the heart and lungs embarrassed, profound disturbance of the brain and a fatal termination with venous engorgement and asphyxia. All these forms point to a profound disturbance of the

nerve centres. Furthermore, we find in tropical fevers of all kinds, the greatest indication of failure or imperfection of man's heat-regulating centres to his surroundings.

Throughout the whole inter-tropical zone, fever in its various forms stands for almost as much sickness and mortality as all diseases put together.

On the other hand, exposure to harsh and unusual degrees of humidity and cold, especially in the enfeebled and ill-clad populations, produce pneumonia and rheumatic fever, other errors of the thermotaxic mechanism, because its weakened centre is too readily overcome by the thermic reaction which the cold induces.

After those general considerations of extreme heat and cold in their onslaught on the heat-regulating centre, let us develop some minor points of interest and practical value in clinical medicine: In diverse pathological conditions, like influenza, a morbid poison frequently prevents dissipation of heat by diaphoresis, in spite of high central and peripheral temperature and many degrees above the 3·5° F. which induce physiological diaphoresis, as we have seen before.

In the same person, who, under normal conditions, perspires freely in a region of the skin, the temperature of which is 96° F., while that of the centre is 98·4-5° F., we may find in the course of an attack of influenza the skin remaining dry with a temperature varying between 99 and 102, that of the rectum being from 100 to 103°. An antagonistic poison to the toxin of influenza, for instance, *antipyrine* or *pilocarpine*, will upset this disagreeable condition and establish diaphoresis with corresponding reduction of external and central temperature.

It is a well-known fact that automatic heat regulation is more powerful in preventing the disturbance of temperature than in bringing about conditions.

Nature, in her wisdom, here once more tries to teach us that prevention is far more valuable than cure, and that under all circumstances, the wise guidance she is anxious to give us at every step emphasizes the necessity to live up to certain laws rather than restore time and again natural conditions, when they have once been disturbed.

The nerve centres to which this great function belongs are able to resist for a long time the continuous action of disturbing influences, their vigilance and activity are unceasingly on the alert until a moment arrives when they are exhausted by the contest and practically routed.

Does not this explain to our utmost satisfaction why it is that in such individual the incubation stage of some infectious or contagious disease is short, in such other individual protracted? It is a question of nerve-power of lesser or greater resistance depending on the integrity of the nerve centres that control our body's temperature.

In cases of starvation, the temperature remains almost normal till the very last day, when it quickly falls 4° F., and at the moment of death from inanition, it takes a sudden tumble of 23 to 24° F.

Inversely, when animals are placed in an overheated medium, their temperature after reaching 104-106° F., remains at this point for a long time before going beyond, and all of a sudden, the resistance in the nerve centres is overcome, the temperature rises to 113° F. and the animal dies through the physical phenomenon of albumen coagulation. As far as the length of time is concerned, during which a successful struggle against the causes of hyperthermia takes place *much depends on the energy possessed by the individual nervous centre.*

Therefore, in weak and enfeebled persons, in those that are thoroughly exhausted or suffer from chronic affections or acute diseases of long duration, in convalescents new or recurrent attacks of fever are seen to occur

in consequence of influences, which in a healthy subject, might possibly excite increased calorification, but certainly would not succeed in raising the temperature of the body. In this manner we are able to explain the singular fact that at the period of decline of *typhoid fever*, the same cause will, as the case may be, induce sometimes a *syncope*, other times, a *febrile manifestation*. It is for this reason also that in the course of convalescence, the elevation of temperature which occurs each time the patient rises, gradually becomes less intense in proportion as he is enabled to assimilate more food, eat more and thus gain more and more physical strength.

In the very same way, when a person first engages in one of the various kinds of public social functions or sport, the fever determined by nervousness, fear, or by muscular exertion decreases with growing self-reliance, self-confidence or with growing strength from perfect and continued training: A physiological equation is brought about and the elevation of temperature which was the effect of inequality between the nerve force supply of thermotaxic centres, and the demands made on those centres by unusual exertion or unusual mental excitement, will not be noticed any further. In like manner is explained the circumstance why a strong man only presents feeble oscillations of temperature, the nocturnal decline and the diurnal elevation both being but little marked, so that his thermic line is stretched and closely approaches the straight line, while that of the weak and feeble man shows marked oscillations. But give to the latter some drug which is able to instil a little nervous energy into his system, such as quinine in moderate quantity, and his thermic line will become stretched.

All these and many similar facts have brought forth the nervous theory of fever which was formulated some ten years ago by Professor Hale White, of London.

This theory supposes that the rise of temperature may be caused by direct interference with the thermic centre or by circulating toxins or by peripheric stimulation reflecting on the heat-producing, heat-dissipating, and heat-controlling centres.

With regard to peripheral impressions, we know that the passage of a kidney stone or gall stone often causes a rise of temperature, and certainly, during some cases of confinement, we all could find a slight elevation of temperature. Every surgeon knows about the fever heat that often follows fracture of the tibia, humerus or femur. Concerning fever-producing substances circulating in the blood, we know that atropine and caffeine will send up the temperature if given in full doses and it is more than likely that in all specific fevers it is the toxin that causes the increase of bodily heat by its influence on the heat-producing and heat-controlling centres. Finally, we have the temperatures which are directly due to disorder of the heat mechanism, and this is the most interesting group helping to form the very foundation of the *modern theory of pyrexia*: There is considerable experimental evidence that damage to the *cerebrum* will cause a *rise of temperature*; it is also certain that one part of the central nervous system presides over loss of heat, while a third centre balances the two, so the temperature remains practically constant within narrow limits. It is extremely probable that the chief centres for thermogenesis or heat-production are the "*corpora striata*" and "*pons varolii*," because damage to this part of the cerebrum produces a considerable rise of temperature. The regulating centres are located in the cortex. Experiment and clinical observations lead to this admission.

If one corpus striatum only is damaged the temperature will be higher on the opposite side of the body. So in hemiplegia we find the temperature raised in the axilla of the paralyzed side.

In the case of cerebral hemorrhage, there may at first be a considerable

fall of temperature owing to the severity of the shock, but as the effects of this pass off, the rise of temperature due to damage of the corpus striatum or pons varolii shows itself.

In the case of sudden damage to the corpus striatum, the rise of temperature takes place quickly and within twenty-four hours attains its maximum. It then slowly falls, till in a few days, the normal point is reached again; thence it reaches a subnormal degree for a few days and returns gradually to the normal body heat.

Clinical medicine affords proofs that injury to the cerebral cortex causes rise or can cause rise of temperature.

In meningitis, as is well known, the temperature may be very irregular; often it runs very high, often it drops very low; in a few hours' time we may notice a change from $97\frac{1}{2}$ to 108° F.: this is easily explicable if we believe that the rise of heat in this disease is in part, at least, due to the excitation of the cortex by the inflamed meningeal coverings impairing the regulating function that ought to control the heat-producing mechanism of the corpus striatum and the heat dissipation in cord and medulla oblongata. Next we will consider epilepsy, chorea, and hysteria, three functional diseases of the cortex and brain substance.

During a fit of epilepsy, the temperature is apt to rise several degrees; in the condition of status epilepticus, the temperature may run as high as 107° F.

In severe chorea, temperature is often raised several degrees; the fever of hysteria is a common occurrence.

To further illustrate the role of nervous influences in the production of fever, let us briefly call to mind some clinical facts which are undoubtedly familiar to all of you:

Did it never strike you that fever patients, when admitted to the hospital, in four cases out of five, present a temperature higher by a degree or more than it was before admission, and than is found on the next or the following days? You also certainly noticed that visits to fever patients have the effect to immediately raise the temperature. It is also generally known that unseasonable ingestion of food in the course of continuous fever increases its intensity. Consumptives returning from a promenade, even if quite a short walk only, often have a temperature three degrees higher than when they started out.

Lastly, emotional and intellectual perturbations are sufficient to cause a recurrence or a new manifestation of fever. Take your patient recently admitted to the hospital, and, all things considered, the analysis of the case goes to show that mental, emotional and volitional perturbations as well as bodily weariness have the principal share in the production of this attack of fever.

Emotional nervous fatigue caused by the regular visiting days and principally induced by conversation are the determining causes of many attacks of fever.

There are cases to which we have alluded already and where there is no other explanation of the higher temperature than muscular effort, as in the initial stage of convalescence after typhoid fever—when often the slightest attention the patient pays to his attire or his toilet, is immediately followed by a marked rise of temperature,—the heat-regulating centres being still in a state of extreme weakness and unable to check the furnace started by slight muscular exertion.

As conclusion I should state, that if a strong nervous system is able to protect the organism against thermic variations by keeping the integrity of the heat-producing and controlling centres, nervous weakness renders the agents of protection less vigilant and less efficacious. Under conditions of nervous weakness, effects which escape detection in a normal state are

observed with a magnifying glass, as it were—forces the very existence of which has been doubted, may then be seen openly at work. A weakened nervous system is indeed a particularly sensitive reagent for fever-producing agencies, and it is perhaps with good reasons that many diseases like heat-stroke, rheumatic fever, typhoid fever, pneumonia, intermittent and remittent malaria are called "nervous fevers," because they may be regarded as the outcome of errings and deviatious of weakened nervous centres. A strong nervous system is able to protect the body against thermic variations and consequently disturbed metabolism, while nervous debility surrenders the organism to its numerous and invisible enemies.—*Medical Times*, Feb. 1905.

MYASTHENIA GRAVIS.

By JAMES TAYLOR, M.D., F.R.C.P.,

TWO TYPICAL CASES.

The first patient is a girl of 25, under Dr. Beevor's care, who until May last was in perfectly good health. She then found that she had some difficulty in speaking, and that after she had talked for a little while her articulation became indistinct, and much more difficult than it usually was. This peculiarity was strikingly illustrated when she tried to read aloud, for after even a few minutes of such reading she became not only inarticulate but actually voiceless. This weakness persisted, and to it was presently added a certain degree of difficulty in using the hands, especially for fine movements, such as picking up a pin, or buttoning her dress. The arms, apparently, at this time were fairly strong, but they also became weak, so that she had difficulty in doing her hair in the morning. The weakness of the hands increased, so that in doing needle-work, at which she worked for her livelihood, she constantly found that she was unable to thrust the needle through the piece of cloth which she was sewing, or unable to extract it from the cloth. The lower limbs also began to show a certain weakness, so that she staggered when she walked, and could not walk so far as she used to. She also noticed that she occasionally saw double, and she had a heavy feeling about the eyelids, although it was never noticed that there was any actual drooping of them. Her condition now is one of very considerable weakness in the lower limbs, weakness in the upper limbs, slight difficulty in carrying out extreme movements of the eyes, and marked impairment of articulation, becoming much more obvious after she has spoken for a few minutes. There is no wasting, no visceral disease can be discovered, there is little, if any, difficulty in swallowing, and all the other reflexes are normal.

The second case is that of a patient whom some of you may have seen before; a man who has had, for nearly ten years, a varying degree of weakness in the arms and legs and also in the ocular movements. Apparently the weakness in this case displayed itself first in the ocular muscles. Then the arms became very easily tired, so that he became quite unable to work with his hands at a higher level than his head, and as he was a house-painter, this soon became a very real and practical inconvenience. He also had very great difficulty with the lower limbs, so that, for example, in going along the street he was only just able to make his way from one lamp-post to another, and when he gained the support of one lamp-post, he had to stop in order that he might recover sufficient muscular force and energy to carry him to the next lamp-post. During the past ten years these different weaknesses have been variable. Sometimes the weakness of the legs was very great, sometimes it was less; and at the present time he is able to get about with a fair amount of comfort. His arms he is still unable to use freely; he has almost

complete paralysis of all the ocular movements, and there is very marked double ptosis. He has little if any difficulty in articulating, but he has occasionally suffered from difficulty in swallowing. He has in certain muscles the characteristic myasthenic reaction of which I shall say a little more presently. Otherwise his condition is quite normal; there is no wasting, there is no visceral disease, so far as we can discover, and, as already remarked, the reflexes are quite normal.

These, then, are two characteristic cases of the disease of which I wish to speak to-day.

SYMPTOMS AND CLINICAL HISTORY.

This disease, usually known as myasthenia although the full names myasthenia gravis pseudo-paralytica, has only come into prominence in last few years. It is characterized, broadly speaking, by great muscular weakness, affecting most strikingly, in the majority of cases, the muscles which are supplied from the medulla oblongata, and are therefore closely related to the maintenance of the vital functions. The muscles, however, of the limbs, both upper and lower, and of the trunk are affected, and in some cases there is reason to suppose that they are affected before the muscles which are supplied from the bulb. So far no definite changes in the nervous structures from which the affected muscles are supplied have been found; and it is interesting to note that so long ago as the Seventies Dr. (now Sir Samuel) Wilks published a case of bulbar paralysis without any anatomical changes, a case which in all probability is to be regarded as the earliest case of myasthenia gravis of which there is any record. A very interesting series of cases apparently of this disease is also to be found at the end of Dr. Beevor's article on bulbar paralysis in Allbutt's *System of Medicine*.

The first sign of weakness in this disease usually occurs in the levatores palpebrarum, giving rise to ptosis. Sometimes this ptosis is equal on the two sides; occasionally it is more marked on one side than on the other. It is frequently associated with weakness of the ocular muscles, and the effort to overcome the ptosis by means of the action of the frontales manifests also some weakness in those muscles. Diplopia, of varying character, is often present, the variation depending on the weakness of different ocular muscles. This weakness varies very much at different times. On some days the patient has no obvious signs of weakness either of the external ocular muscles or of the levatores; on another day there is very marked impairment in the actions of all these muscles. Nystagmoid movements are occasionally present, these also being evidence of weak muscular action. Although the external ocular muscles are so frequently and almost constantly affected, it is extremely rare to have any pupil changes. Difficulty in masticating is also frequently present, the masseter muscles especially becoming easily tired, and the patient not uncommonly during eating supporting his lower jaw with one or other hand. This difficulty in masticating is often more marked in the later part of the day, and it may be said that this is a feature of the muscular weakness generally. The muscles about the mouth are also weak, so that there is difficulty in whistling or in blowing out a candle. Dribbling may occur, swallowing is difficult, fluids being more easily taken than solids, although there may be occasional regurgitation, and the pharyngeal reflex is often absent. Palate weakness is also frequent, giving rise to a nasal voice and inability to blow out the cheeks, frequently associated with the articulatory difficulty which is a marked feature in the first case I referred to. The laryngeal muscles themselves are rarely affected, but aching or stiffness of the tongue is frequently complained of, and it may be impossible for the patient to protrude the tongue, or to move it freely from side to side. One very striking feature related to weakness of those

structures about the mouth or connected with articulation is the character of the speech. When the patient begins to speak, articulation may be clear and the voice good. As he proceeds the weakness becomes marked, the tone becomes lower, a nasal character is imparted to the articulation, and the patient finally becomes both breathless and voiceless.

The respiratory muscles may also be affected, so that there is interference with the amplitude of movements during respiration. There is dyspnea on the slightest exertion, and, as has already been said, when the patient speaks for a little time there is marked breathlessness associated with the voicelessness already referred to. This dyspnea constitutes an element of considerable danger, because weakness of the structures which are associated with breathing gives rise to actual crises of dyspnea, in which the patient may die; and in several of the cases in which death has occurred it has supervened, apparently as the result of an acute crisis of dyspnea. Besides the trunk muscles, those of the extremities may also be affected. Thus, the arms may become easily tired, and a female patient—as our first patient actually did—frequently complains of an increasing difficulty in carrying out the movements which are necessary in doing her hair in the morning. In the lower extremities the quadriceps and the ilio-psoas group seem to suffer most. Walking far, as a rule, is impossible, and going up more than a few steps of stairs is quite beyond the patient's power. A sudden giving way of the legs, causing somewhat severe falls, is not unusual.

There are various conditions which seem to exercise considerable influence upon this myasthenic weakness. Thus, emotional conditions undoubtedly intensify the weakness in a very marked way. Cold, in some cases, acts similarly, and women affected with the disease are always worst at the menstrual period. Persistence in a movement soon exhausts a muscle, yet even with regard to this point it must be remembered that there are very great variations in muscular weakness, and that a movement which can be repeated only two or three times on one occasion can be repeated as often as twenty or thirty times on another. It is also noteworthy that the patient is frequently very much better and stronger in the early morning, but becomes gradually worse and weaker as the day proceeds, so that movements which can be carried out with ease and facility in the morning are quite impossible in the evening.

The electrical reactions in a case of myasthenia are of very great interest, and the reaction of such cases to faradism is characteristic. It is found that after repeated stimulation of muscles by such a current, the response becomes more and more feeble, so that in time it disappears entirely. With galvanism, however, this phenomenon is not observed. Atrophy of muscles has sometimes been present, but it is by no means the rule. The reflexes are usually very active, but in some cases probably those in which the weakness has reached an extreme degree, it has been possible after a few taps to completely exhaust the knee-jerk, the muscles thus reacting to mechanical stimuli in the same way as they do to stimulation by faradism.

ETIOLOGY.

Males and females are found to suffer with almost equal frequency, and enough cases have now been published to permit of such statistical evidence being regarded as approximately accurate. The oldest case so far published is 55 years, the youngest 12; but I have at present a patient under my care, apparently suffering from this condition, who is only 8; and it is not improbable that as our knowledge and observation of the condition extend, the limit of age may be increased in both directions. The occupation seems to have no distinct connexion with the disease, although the majority of cases described have occurred in manual workers.

In many instances the symptoms have followed some acute illness, such as influenza, scarlet fever, typhoid, or severe diarrhoea; and pregnancy, menstruation, emotional strain, cold baths, and over-exertion have been invoked in different cases as exciting causes. In some instances more than one member of a family has suffered, and occasionally the condition has been superinduced upon some form of weakness already existing, such as lead palsy.

MORBID ANATOMY AND PATHOLOGY.

As regards morbid anatomy, so far the cases examined have shown no definite signs of changes in the nervous structures which supply the affected muscles. Nor have muscles themselves shown any material alteration, except in rare cases, in which a slight degree of atrophy has been present. In some cases, however, very definite enlargement of the thymus gland has been present, in one a condition of lymphosarcoma, in others lymphoid tissue has been present in the muscles themselves, or multiple tumours have been present distributed throughout different organs of the body in such a way as to give possibly some clue to the real nature of the disease. From all that we can gather in the symptomatology of the disease and the condition of the structures generally, it would seem as if the terminal parts of the lower motor neuron were the parts whose function is interfered with. From the nature of the weakness, its variability, and its distribution, it would seem as if we must invoke the presence of some toxic substance to give rise to this interference with the terminal nervous structures; and the presence, in some cases at all events, of the enlarged thymus gland and of the lymphoid tissue in the muscles and other structures already referred to, perhaps give us a clue to the origin of such toxic substance. It seems possible that this tissue is the source of the poison, and that the discovery of its presence may be the means of throwing much light on the origin of the disease. We cannot help thinking in this relation of myxoedema. We know that myxoedema is a disease which is caused by the absence of a certain glandular secretion from the blood, and that by replacing this secretion artificially the disease can be cured. It is possible that in myasthenia we are dealing with a disease which is, in a certain sense, the converse of myxoedema; that in myasthenia we are dealing with a diseased condition, the result of the presence of a poison in the blood, this toxic substance being produced by an overgrown or modified thymus, or by the abnormal lymphoid tissue present throughout the body, and even in the muscles themselves. And if this is so, our efforts in regard to treatment will necessarily be directed to the discovery of some substance which will be antagonistic to the poisonous substance secreted from such tissue.

DIAGNOSIS.

The diagnosis of the condition, when one has become familiar with the type of disease, is not very difficult. Undoubtedly the closest analogy which is offered is to those cases of nuclear palsy in which the cells of the nuclei related to the bulbar and the ocular muscles undergo gradual, and in time complete, wasting. In many cases it may be impossible to say to which class of cases a given one belongs. It can only be by careful and repeated examination, by noticing the variation of the conditions, by recognizing the associated weakness and easy exhaustion of the trunk muscles and those of the extremities that we can be convinced that the condition is one of myasthenia and not one of nuclear disease. In reference to diphtheritic paralysis, as will at once be recognized, the analogy is very close. Similar structures are affected, and they are affected in a similar way; and often in myasthenia the onset of the trouble is almost as rapid as it is in diphtheritic paralysis. In the latter disease, however, there will usually be a history of sore throat, etc., to go upon; there

will be an absence of the knee-jerk as contrasted with its activity in myasthenia, and there will be the comparatively early clearing up of the condition under appropriate treatment. Poliioencephalitis of a chronic character, which is really the degenerative nuclear palsy to which we have referred already, may also, of course, simulate the condition. An acute poliioencephalitis is scarcely likely to be mistaken, the onset being so much more sudden. Hysteria is a name which has frequently been given to cases of myasthenia, and the curious variation in the condition, especially in the earlier stages, when the patient is sometimes apparently quite well, and at other times, even on the same day, profoundly weak and ill, may seem to some extent to justify the mistake. An interesting but tragic example of this error is related in the article in Allbutt's *System* already alluded to. But careful examination of the weakness of muscles, especially the weakness of ocular muscles, which it is almost impossible for a patient to simulate, will usually convince an observer that the condition is not a functional one.

PROGNOSIS.

The prognosis in this disease is always somewhat grave. It is no doubt true that many cases persist in the same curiously variable condition during many years. The second patient referred to to-day has been in a similar condition to that which he occupies at present for about ten years. I recently saw a man in a similar condition in whom symptoms had been present for at least fourteen years. Yet in other cases there is very little doubt that the disease is a very serious one, is very rapidly progressive, and may lead to sudden and somewhat unexpected death. The danger usually lies in an affection of the respiratory apparatus, and patients have frequently died from what may be described as a respiratory crisis. In one instance the patient was admitted to hospital one afternoon about 3 o'clock; she became suddenly dyspnoeic by 8, tracheotomy was done without affording her any relief, and she died at 2 o'clock next morning. The sudden and tragic changes in a patient apparently well a few hours before stamp the disease as one to be looked upon always as possibly serious. Yet in some cases recovery apparently takes place, and it is possible that this is occasionally permanent.

TREATMENT.

Treatment so far has not resulted definitely in any modification of the diseased condition. Strychnine, no doubt, especially if given hypodermically, seems to have a good influence. Thyroid treatment, and various other forms, treatment by organic extracts, have been tried without any benefit. Yet if the suggestion which the recent pathological findings seems to point to be correct, it is to be hoped that some form of antitoxin may be discovered which will have the effect of antagonizing the poison which is possibly formed by the lymphoid tissue which has been found present in certain cases. — *Brit. Med. Journ.*, March 11, 1905.

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