

MALGAIGNE.—Fractures and Dislocations.

F. C. SKEY.—Lancet, 17th September 1870.

P. J. HAYES.—Dublin Journal of Medical Science, October 1875.

BELLAMY.—London Medical Record, 31st March 1875.

NUSSBAUM.—Referred to by Bellamy in London Medical Record as above.

J. SPENCE.—Edinburgh Medical Journal, March 1876.

A. G. WALTER.—Philadelphia Medical and Surgical Reporter, July 1875.

FIFIELD.—Boston Medical and Surgical Journal, January 1877.

N.B.—This bibliography must be regarded by the reader as but a partial list of the articles written on the subject, for of late years the operation has become quite common, and many single cases have been reported. Unfortunately, I have been unable to verify all the references given.

ARTICLE IV.—*Some Account of a Disease called "Shima-Mushi," or "Island-Insect Disease," by the Natives of Japan; peculiar, it is believed, to that country, and hitherto not described.* By THEOBALD A. PALM, M.B. and C.M.

THE following interesting notice occurs in a recent letter from Dr Palm, who is a medical missionary at Niigata, in Japan, to the Rev. John Lowe, F.R.C.S.E., Superintendent of the Edinburgh Medical Missionary Training Institution. Some cases of interest are related in the same communication, but our space forbids us from publishing them at present. We may mention, however, that out of 1263 cases treated by Dr Palm, 288 were eye diseases, and 193 syphilitic; that he sees the latter class of diseases in all their forms and results, and that he is told that there is scarcely a man in Niigata who has not at some time suffered from some form of venereal disease.

"Last summer," writes Dr Palm, "I had the opportunity of observing a disease which, so far as I know, is peculiar to Japan, and has not yet been described. It occurs, moreover, in certain well-marked districts, and at a particular season of the year, so that the opportunities of investigating it do not often occur. It is known here as the *shima-mushi*, or island-insect disease, and is so named from the belief that it is caused by the bite or sting of some insect peculiar to certain islands in the river known as the Shinagawa, which empties itself into the sea at Niigata. This river has a strong current, is subject to occasional floods, and being difficult to restrain, is allowed to take its course, eating out its banks on one side, and leaving tracts of new land or islands on the other. It is in these newly-formed soils that the disease occurs. I could find nothing peculiar in the vegetation of these districts.

They are partially under cultivation, and the disease occurs among the agricultural labourers who work there, or others who may happen to visit the district at the time. Those are attacked who go among the vegetation, not those who walk along the stony or gravelly banks. The disease occurs only in the months of July and August, especially at the time when the flax-plant, which is there much cultivated, is being reaped, and especially among the reapers. The disease is said to be more prevalent in years when the water has been high. It is also said that those who work there only in the early morning or evening are not affected. It is also said that those who are stripped for their work are less frequently affected than those who keep on their clothing. The remarkable thing is, that none of those who are affected are aware at the time of being bitten or stung, and that none of them have ever seen the insect; but the belief universally prevails that it is an insect. At the time of my visit to the spot on 1st August, I could find no one who had seen the insect, though I was told of one man who professed to have seen it, and stated that it was like a small spider. The peasants believe that it is a fine, hair-like worm, of which there are two varieties, the red and the white; but I was unable to discover any foundation for the belief.

"The first symptom of the disease is a hard, round swelling of the skin, like a boil, which is discovered four or five days after having been in the district. Together with this are constitutional disturbance, chills, and feverishness, and swelling and tenderness of the glands in the neighbourhood of the swollen part. The centre of the swelling sloughs and breaks down into an ulcer. Sometimes the tenderness and swelling of the glands is noticed before the phlegmon in the skin appears. Sometimes, for a day or two before the swelling is noticed, there is languor, malaise, headache, loss of appetite, and slight feverishness. The fever reaches a maximum at the beginning of the second week, when an eruption appears over the whole body in most cases, after which the fever subsides. Most cases have purging of blood and vomiting, and death occurs by exhaustion in three or four weeks from the first symptoms, in fatal cases. It is said that the disease proves fatal in about one-fifth of those attacked. Delirium does not occur, nor are there any symptoms of narcotism even in the worst cases; albumen does not appear in the urine.

"For the above facts I was indebted to native medical men, intelligent men, with a fair knowledge of European medicine. I am in the habit of visiting the government hospital at Nagaoka, of which my informants are the medical officers. I was curious and sceptical about the disease, and expressed a wish to see it. Accordingly, when visiting the hospital on 1st August, I was taken to the district, about two miles from Nagaoka, where I found that a Buddhist temple had been appropriated as a temporary hospital for the reception of patients affected by the disease, and that an

intelligent young man, a student from the medical school in Tokio, conducted by German professors, had been appointed as house-surgeon. It appeared, however, that the peasants had an aversion to Western medicine, and that it was very difficult to induce them to come into hospital. I took the following hasty notes of the cases in the hospital:—

"No. 1.—A man having a hectic appearance; temp. $102^{\circ}4$, pulse 104; has an ulcer on scrotum size of a threepenny-piece, which commenced as a solid elevation, and gradually broke down into an ulcer; no induration around it. Skin has here and there purplish maculæ, and some papules. Tongue dry and glazed in front, yellow fur at the base; bowels regular; liver of normal size. Heart is weak. Spleen not enlarged. Breathing shallow and 51 per minute, but on percussion and auscultation the only abnormal sign is that breathing is rather harsh in character. The patient appears to be in a very exhausted condition, and seems excited and frightened at being examined by a foreigner. Intellect is clear.

"No. 2.—Lad æt. 17. The fourteenth day of the disease. The primary sore is at the verge of the anus, where there is a sharply-cut oval ulcer, $\frac{1}{4}$ inch long and about $\frac{1}{8}$ inch deep. He was brought to hospital on 28th July, when at noon his temperature was 105° , and he was too ill to move. The sore was discovered on the 19th, and the inguinal glands became swollen at the same time. He has an eruption, which on the face is papular and desquamating; on the trunk and limbs is macular. It appeared two days ago. Now his pulse is 100, full and strong, temperature 99° in the forenoon. Tongue red and moist in front, has yellow fur towards base, appetite is about one-third of his normal; bowels have not been moved for nine days. Has slight cough, otherwise lungs are normal. Heart normal. Spleen not enlarged. Liver slightly enlarged. Urine dark in colour, otherwise normal. Talks incoherently. Face not flushed, but conjunctivæ injected; pupils slightly contracted. Glands not markedly enlarged.

"No. 3.—A strong man, æt. 31. Tenth day of disease. Has an ulcer the size of a threepenny-piece on inner side of thigh, sloughy surface, no induration around edges. It began as a papule six days ago with a red areola, and ulcerated into its present condition. Has an eruption, which appeared two days ago, of maculæ on trunk and legs, and 2 papules on face. Tongue white, fur at fore part, yellow behind, and red raised papillæ at edges; sordes on lips; appetite one-third of normal; bowels regular. Heart sounds are normal; pulse 76. Has cough; slight signs of bronchitis on left side. Liver somewhat enlarged. Splenic area of dulness somewhat increased. Glands in right groin are markedly enlarged. In other places glands can be felt, but not more distinctly than in many healthy persons.

"No. 4.—Male, æt. 35. Fourteenth day of disease; has sore on penis of same character as those described above. An eruption came out six days ago, but disappeared and left no trace. He has

now no constitutional symptoms, and appears to be quite well, with the exception of the sore.

"No. 5.—Female, æt. 15. Fifth day of disease. Has an inflamed spot like a small boil on right side over ninth rib; the glands in right inguinal region are tender and enlarged. The left inguinal glands are also enlarged, but apparently due to an injury of left foot. Temp. $98^{\circ}5$; pulse 60; temp. last evening was 100° . No eruption yet. Lungs and heart sound. Spleen not enlarged, and otherwise well.

"No. 6.—Male, æt. 18. Seventh day of disease. In right iliac region a hard round swelling, size of a threepenny-piece, with a black clay spot in centre. Over trunk, limbs, and face are raised purplish spots, which appeared two days ago. Axillary glands enlarged. Pulse 120; temp. $103^{\circ}9$. Tongue red and moist at edges, black fur in centre. No appetite. Other organs seem normal.

"I saw one man who had recovered completely. The disease appeared to leave no sequelæ. After seeing the cases in hospital, I went out into the neighbouring village, and under the guidance of the head man of the place, visited several cottages where persons affected were lying. They were most of them in such darkness and dirt as to make the examination of them very unsatisfactory. They all had the appearance of persons prostrated by a severe fever, and all had the primary sore.

"The disease appears to me to be specially interesting from a pathological point of view in the analogy it presents to syphilis: the primary sore caused apparently by inoculation with an animal poison, the period of incubation short, the secondary eruption and fever, affection of glands. In fact, the disease is a link pathologically between syphilis and the eruptive fevers, and is interesting in connexion with Mr Hutchinson's view of syphilis as an eruptive fever having a protracted course.

"As to treatment, various drugs have been tried, including iodide of potash, but none seem to have any marked effect. Treatment directed against hyperpyrexia and other untoward symptoms that may arise, attention to hygienic conditions—in fact, such measures as would be taken to steer a patient safely through a continued fever, seem to have met with the best success. I learned by subsequent inquiry that all the patients of whom notes have been given made a complete recovery.

"As to the etiology of the disease, I was inclined to agree with the popular belief that it was caused by the bite or sting of an insect, and some probability was lent to this by the fact that the sores were situated in parts of the body loosely covered by clothing. Thus the men whom I saw were all affected in the parts that would be covered by the loin-cloth, which would be their sole article of clothing while working in the fields.

"Later on in the month of August, the house-surgeon, above-mentioned, called on me and stated that he had discovered the insect,

that while picking with a needle the black spot in the centre of the swelling of a patient recently affected, he noticed crawling up his finger, a very minute insect, which, upon microscopic examination, resembled a spider. To preserve his specimen he had stuck it with gum between two glass slides, and offered it to me for examination. His method of preserving it, however, had rendered it impossible to do more than recognise that it was an insect of some kind, but it may have been an *Acarus scabiei*. Under the circumstances, I do not consider it yet demonstrated that it is caused by an insect.

"I propose, however, next summer, acting upon this supposition, to try an external application of some preparation of cevadilla as an insecticide and prophylactic, if I can induce the labourers to make a daily use of it while working in the district.

"I should like to know whether anything similar has been observed in other countries, and what are the symptoms caused by the bite of certain poisonous spiders."

ARTICLE V.—*Note on the Physiology of Respiration.* By T. M. LOWNDS, M.D., Egham Hill, Surrey.

THERE is one point in the physiology of respiration to which it seems to me attention has not been drawn. It is generally stated that the venous blood gives off its carbonic acid into the air-cells by virtue of the laws which govern the inter-diffusion of gases through a moist membrane. This is undoubtedly true, but it does not proceed far enough and take into account all the circumstances which exist in the air-cells of the lungs where these interchanges of gases take place. The circumstances to which I allude are the varying densities of the gases contained in the air-cells. These varying densities are produced by the expansion and contraction of the size of the cavity of the chest by the muscles of respiration and the resiliency of the chest walls, thus causing an increase or diminution in the size of the air-cell, and a difference of density in its contents. Thus in ordinary inspiration, the capacity of the chest is increased about one-tenth, or perhaps more, and the air in the cells becomes rarefied to a like extent. What is the effect of rarefaction (1st) on the air brought in by the trachea and the minute bronchial tubes to the air-cells; and (2d), on the venous blood from the pulmonary artery circulating in the very thin membrane forming the inner coating of the cell? It has a like effect on both, though in a different degree. (1st), The air rushes down the trachea to render the gas contained in the cells of the same density as the external atmosphere; and (2d), the gases, carbonic acid, etc., dissolved in the venous blood circulating in the minute capillaries of the cell are given off in greater quantity when the density of the gas in the cells is reduced. This last effect is doubtless caused by the well-known law that gases dissolved in liquids are more easily given off when the atmospheric pressure is lessened.