

day after the accident he complained of pain and stiffness in the jaw and throat. This gradually became worse, until he had difficulty in eating, drinking, and in opening his mouth. He then sent for his medical adviser, Mr. Campbell, of High Park-street, and was treated for eight days with chloral hydrate and bromide of potassium, but did not improve. On the contrary, his jaws became more fixed and he became quite unable to swallow solids, though still able with difficulty to manage liquids. He suffered also from spasms, which, at first few in number and slight in effect, gradually increased in frequency and violence, and were readily produced by any slight noise, movement, or excitement. At this time I was requested to see him with Mr. Campbell, and this I did on the fourteenth day of illness. He was suffering from tetanus, having spasms about once in three minutes. The muscles of his jaws, abdomen, and legs were hard and firm, but those of his arms were softer. There was marked opisthotonos. His mouth could only be opened very slightly, and there was much difficulty in deglutition, only a small quantity of fluid being swallowed at a time. The least excitement or noise immediately caused a spasm. His temperature was 98.8° F. and his pulse 120. The bowels were constipated and the urine scanty, highly coloured, and full of urates. The terminal and half the second phalanx of the middle finger of the left hand were missing, while the stump ended in an unhealthy-looking wound, through which the bone protruded for about one-eighth of an inch. There was also a cut upon the first phalanx of the same finger. I suggested that as he was suffering from a chronic form of tetanus he would be a suitable subject for the antitoxin treatment, and, considering the bad condition of the wound on the finger, together with the cut on the first phalanx, that it would not be unreasonable to remove that digit at the metacarpo-phalangeal articulation. Mr. Campbell kindly consented to this line of treatment and requested me to get some antitoxin. After some difficulty I was able to get some of Roux's antitoxin for tetanus, which was kindly given to me by Dr. Carter, of Rodney-street. I then removed the stump of the finger at the metacarpo-phalangeal articulation and then injected fifteen grains of Roux's antitoxin (which was all I possessed) into the gluteal region. Though placed fully under the influence of chloroform the stiffness did not depart from the patient's limbs or jaws. For some time after the narcosis he was free from spasms, but gradually they returned to their former frequency and strength. On the next morning (Sunday) there were no marked rise in temperature and no increase in the quantity of urine, which remained as before. The slightest touch gave rise to spasm, with marked opisthotonos. The risus sardonicus was marked, while the jaws could be opened about a quarter of an inch or less, and there were sordes on the lips. On the evening of this day the patient was evidently worse, swallowing being more difficult. During the course of the next day (Monday) I was able to obtain some of Tizzoni's antitoxin from Messrs. Allen and Hanburys, Tizzoni's preparation being the one I particularly desired to use. During Sunday night and Monday the patient became rapidly worse, swallowing being almost impossible, and the spasms being even more frequent and stronger. At 6 P.M. on Monday the antitoxin arrived, and I injected at once thirty grains of the sixty grains which I had obtained into the loose subcutaneous tissue of the abdominal wall. The patient's temperature was 100.2°, and his pulse 120. On Tuesday morning the spasms were a little less frequent and not quite so violent, and the patient was able to swallow somewhat better. In the evening the spasms were only once in ten minutes on the average, and not nearly so strong; swallowing was the same as in the morning. The temperature was 99°, and the pulse 100. I then injected fifteen grains more of Tizzoni's antitoxin. On Wednesday night the patient was decidedly improving, and had had only about forty spasms in the twenty-four hours. The pulse was 96, and the temperature 98.4°. He could swallow much better, and could open his jaws wider than before. I injected about eight grains of Tizzoni's antitoxin. On Thursday night the patient was much improved, swallowing fluids without much difficulty. There had been only four attacks of spasms during the previous twenty-four hours. The pulse and temperature were normal. On Friday night his condition was very satisfactory; there had been no spasm during the previous twenty-four hours and swallowing was again better, though no solids had been given him. The muscles of the limbs and jaws were very stiff. The jaws could be opened rather better. From this time the patient

gradually improved, and by means of massage the stiffness passed off from the legs, though he had difficulty in walking for quite six weeks. The stiffness in the jaws lasted much longer, being complained of two months later. In about a week he was able to swallow solids, but it was long before any strength came back to him, the wasting being marked. In fact so run down was he that the wound caused by the removal of the finger remained quite passive for over a fortnight, with no attempt at healing and no discharge. The stitches were removed and the wound rubbed with pure carbolic acid, and as the patient gradually improved in strength so the wound gradually healed in another three weeks without any further trouble except the application of pure carbolic acid at intervals.

Remarks.—The incubation in the above case appears to be very definite—viz., six days—and the antitoxin treatment was commenced upon the fourteenth day after the accident and the eighth after the first symptoms by a small injection of Roux's antitoxin. But it was not till the sixteenth day after the accident and the tenth day after the first symptoms that treatment by means of Tizzoni's antitoxin was begun. In all the patient received fifteen grains of Roux's and fifty-three grains of Tizzoni's antitoxin. No apparent effect was caused by the Roux antitoxin, as the transient improvement might be justly assigned to the chloroform. The effect of Tizzoni's antitoxin was astonishing, for the patient appeared to be rapidly sinking and all hope of curing him had been abandoned. It would be unfair to draw any inferences concerning the relative merits of the two antitoxins from the above case; but it is interesting to note that Kanthack, in a paper on the Value of Serum Treatment in Tetanus in the *Medical Chronicle*, April–September, 1895, p. 92, gives a list of 54 cases of tetanus treated by various antitoxins, and among these he finds that 31 cases were treated with Tizzoni's with a result of 23 cures and 8 deaths, or a mortality of 25.8 per cent., while with Roux's 13 cases were treated, 4 being cures and 9 deaths, or a mortality of 69.23 per cent. Further on (page 101) he says: "Of the 31 cases treated with Tizzoni's antitoxin 3 only can be considered test cases, and of these only one survived, while all of the Roux's acute cases died." I found no untoward symptom arise from the use of either antitoxin. The only drawback in the use of the antitoxins was that they were only soluble with difficulty in the sterilised water, particularly the Tizzoni. I may mention that I last saw the patient about a month ago, and he was then in good health. In conclusion, I wish to draw attention to the trouble I had in obtaining any tetanus antitoxin. During the Saturday and the Monday morning I attempted in many ways to get some, and signally failed, till some unknown person, to whom I am most grateful, wired to me to try Messrs. Allen and Hanburys', which I did with success. I think that it is a great mistake that a supply of this antitoxin is not kept in England in some way that it can readily be obtained by any medical man.

Liverpool.

A NOTE ON THE PHENOMENA OF MESCAL INTOXICATION.

By HAVELOCK ELLIS,

EDITOR OF THE "CONTEMPORARY SCIENCE SERIES."

MESCAL buttons (the fruit of *Anhalonium Lewinii*) are eaten by the Kiowa and other Indians of New Mexico, and their use is connected with religious ceremonial. Recently the extraordinary vision-producing properties of this substance have been investigated in America by Prentiss and Morgan,¹ and more especially by Weir Mitchell, who has published a very interesting record of the marvellous colour visions by which he was visited when under the influence of mescal.² There seems, however, to be at present no record of any experiment in the use of mescal in the production of visual phenomena carried out on this side of the Atlantic. The phenomena are certainly of much interest—perhaps even more so to the psychologist than to the physician, notwithstanding remarkable results recorded in the treatment of neurasthenia, &c.—and it may therefore be worth while to record briefly my personal experience with mescal. I will refrain here from describing the visions themselves, which were, perhaps, less wonderful in my case than in that of Dr. Weir Mitchell (who, as he admits, is a

¹ Therapeutic Gazette, Sept. 16th, 1895.

² Brit. Med. Jour., Dec. 5th, 1896.

favourable subject for visions, while I am not), and speak chiefly of other phenomena which were either unnoticed or unexperienced by the American observers.

On Good Friday, being entirely alone in quiet London rooms, I made an infusion of three buttons (a full dose) and took it in three portions at intervals of an hour between 2.30 and 4.30 P.M.³ The first noteworthy result (and the only one of therapeutic interest which I have to record) was that a headache which had been present for some hours and showed a tendency to aggravation was immediately relieved and speedily dissipated. There was slight drowsiness before the third dose was taken, but this speedily passed off and gave place to a certain consciousness of unusual energy and intellectual power, which also quickly passed off, and was not marked and prolonged, as with Dr. Weir Mitchell. So far no visual phenomena had appeared, even when the eyes were closed for several minutes, and there was yet no marked increase of knee-jerk; there was, however, a certain heightening of muscular irritability, such as may be noted when one has been without sleep for an unusual period. The pulse also began to fall. After the third dose I was still feeling on the whole better than before I began the experiment. But at 5 P.M. I felt slightly faint, and it became difficult to concentrate my attention in reading; I lay down and found that the pulse had now fallen to 48, but no visual phenomena had yet appeared. At 6 P.M. I noticed while lying down (in which position I was able to read) that a pale violet shadow floated over the page. I had already noted that objects which were not in the direct line of vision showed a tendency to be heightened in colour and to appear enlarged and obtrusive, while after-images began to be marked and persistent. At 6 P.M. there was a slight feeling of faintness as well as of nausea, and the first symptoms of muscular incoördination began to appear, but there was no marked discomfort. By 7 P.M. visions had begun to appear with closed eyelids, a vague confused mass of kaleidoscopic character. The visual phenomena seen with open eyes now also became more marked, and in addition to the very distinct violet shadows there were faint green shadows. Perhaps the most pleasant moment in the experience occurred at 7.30 P.M., when for the first time the colour visions with closed eyes became vivid and distinct, while at the same time I had an olfactory hallucination, the air seeming filled with vague perfume. Meanwhile the pulse had been rising, and by 8.30 P.M. had reached its normal level (72 in the sitting posture). At the same time muscular incoördination had so far advanced that it was almost impossible to manipulate a pen, and I had to write with a pencil; this also I could soon only use for a few minutes at a time, and as I wrote a golden tone now lay over the paper, and the pencil seemed to write in gold, while my hand, seen in indirect vision as I wrote, looked bronzed, scaled, and flushed with red. Except for slight nausea I continued to feel well, and there was no loss of mental coolness or alertness. When gazing at the visions with closed eyes I occasionally experienced slight right frontal headache, but as I only noticed it at these times I attribute this mainly to the concentration of visual attention. In one very important particular my experience differs from Dr. Weir Mitchell's. He was unable to see the visions with open eyes even in the darkest room. I found it perfectly easy to see them with open eyes in a dark room, though they were less brilliant than when the eyes were closed. At 10 P.M., finding that movement distinctly aggravated the nausea and faintness, I went to bed, and as I undressed was impressed by the bronzed and pigmented appearance of my limbs. In bed the nausea entirely disappeared, not to reappear, the only discomfort that remained being the sensation of thoracic oppression, and the occasional involuntary sighing, evidently due to shallow respiration, which had appeared about the same time as the vision began. But there was not the slightest drowsiness. This insomnia seemed to be connected less with the constantly shifting visions, which were always beautiful and agreeable, than with the vague alarm caused by thoracic oppression, and more especially with the auditory hyperæsthesia. I was uncomfortably receptive to sounds of every kind, and whenever I seemed to be nearly falling asleep I was invariably startled either by the exaggerated reverberation of some distant street noise (though the neighbourhood was even quieter than usual), or, again, by the mental image (not hallucination) of a loud sound, or, again, as I was

sometimes inclined to think, by a faint hallucinatory sounds; this, however, was difficult to verify. At a later stage there was some ringing in the ear. There was slight twitching of the larger muscles of the legs, &c., and before going to bed I had ascertained that the knee-jerk was much exaggerated. The skin was hot and dry. The visions continued. After some hours, tired of watching them, I lighted the gas. Then I found myself in a position to watch a new series of vivid phenomena to which the previous investigators had not alluded. The gas—i.e., an ordinary flickering burner—seemed to burn with great brilliance, sending out waves of light which extended and contracted rhythmically in an enormously exaggerated manner. What chiefly impressed me, however, were the shadows which came in all directions, heightened by flushes of red, green, and especially violet. The whole room then became vivid and beautiful, and the tone and texture of the whitewashed but not remarkably white ceiling was immensely improved. The difference between the room as I then saw it and its usual appearance was precisely the difference one may often observe between the picture of a room and the actual room. The shadows I saw were the shadows which the artist puts in, but which are not visible under normal conditions of casual inspection. The violet shadows especially reminded me of Monet's paintings, and as I gazed at them it occurred to me that mesal doubtless reproduces the same conditions of visual hyperæsthesia, or rather exhaustion, which is certainly produced in the artist by prolonged visual attention (although this point has yet received no attention from psychologists). It seems probable that these predominantly violet shadows are to some extent conditioned by the dilatation of the pupils, which, as the American observers had already noted, always occurs in mesal intoxication. I may remark in this connexion that violet vision has been noted after eye-operations; and Dobrowolsky⁴ has argued that a necessary condition for such vision is the dilatation of the pupils produced by atropine, so that the colour vision (chiefly violet, though to some extent of other colours) is really of the nature of an after-image due to bright light. Dobrowolsky's explanation seems to fit in accurately with my experiences under mesal.

I wished to ascertain how the subdued and steady electric light would influence vision and passed into the next room. Here the richly coloured shadows, evidently due to the stimulus of the flickering light, were not obtrusive; but I was able to observe that whatever I gazed at showed a tendency to wave or pulsate. The curtains waved to a marked extent. On close inspection I detected a slight amount of real movement, which doubtless increased the coarser imaginary movement; this latter showed a tendency to spread to the walls. At the same time the matting on the floor showed a very rich texture, thick and felted, and seemed to rise in little waves. These effects were clearly produced by the play of heightened shadows on the outskirts of the visual field. At 3.30 A.M. I found that the phenomena were distinctly decreasing, and soon fell asleep. Sleep was apparently peaceful and dreamless, and I rose at the usual hour without any sense of fatigue, although there was a slight headache. A few of the faint visual phenomena with which the experience had commenced still persisted for a few hours.

Motor incoördination and the thoracic symptoms of cardiac and respiratory depression were in my case the only really unpleasant symptoms of the experiment. They are barely noticed by the American observers, who emphasise the gastric symptoms and headache, in Dr. Weir Mitchell's case persisting for several days. In my case there were practically no unpleasant after results. I cannot say how far the method of administration affected this result. I took the drug in infusion; previous experimenters used an extract or a tincture, or else ate the buttons.

It cannot be said (from my experience) that the pleasure of mesal intoxication lies in any resultant passive emotional state such as is produced by tea or alcohol, but strictly in the enjoyment of the colour visions produced. Attention is impaired (and one realises under the influence of mesal how largely attention is a matter of coördination), but intellectual judgment remains unimpaired. The visions, as I recall them, seem to me (unlike most dream visions) as beautiful in memory as when I experienced them. The sensory phenomena seem to be due to great and general disintegration and exhaustion of the sensory apparatus; in

³ I first cut up the buttons into small fragments and I poured on boiling water twice; a single infusion, as I have since found in the case of other persons, is inactive.

⁴ Ueber die Ursache der Erythroptie, Archiv für Ophthalmologie, vol. xxiii., p. 213.

a slighter degree of the same phenomena are found in neurasthenia, even the colour vision. I am convinced that all the senses were more or less affected. There were vague dermal sensations, and the body felt unfamiliar to touch, just as everything seemed delightfully unfamiliar to the sense of vision. I noticed, also, that any marked casual stimulation of the skin produced other sensory phenomena—a heightening of the visions or an impression of sound. This is a phenomenon which may throw an interesting light on the synæsthesiæ or "secondary sensations."

The phenomena of mesal intoxication are thus mainly a saturnalia of the specific senses, and chiefly an orgy of vision. Personally, I have found the penalty of a single dose surprisingly light, though, having learned what the experience has to teach, I have no special inclination to renew it. But I fully agree with Dr. Weir Mitchell, that there is every likelihood that mesal will become popular. It certainly has a great future before it with those who cultivate the vision-breeding drugs. At the same time it is of no little interest to the physiologist and psychologist.

Elant, Cornwall.

IMPLICATION OF THE STERNO-CLAVICULAR JOINT OCCURRING DURING THE COURSE OF GONORRHOEA.

BY GEO. HENRY EDINGTON, M.D. GLASG.,
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A MAN, aged twenty-seven years, was seen by me at the Glasgow Central Dispensary on Dec. 16th, 1896, through the kindness of my colleague, Mr. Dryden Moffat. Three weeks previously he had contracted gonorrhœa, but the discharge had ceased at the end of a week and there was none at the time he came to the dispensary. When the gonorrhœa had lasted for one week he began to complain of pain in the neighbourhood of the left shoulder. The pain shifted along the clavicle, and finally he observed a painful swelling over the left sterno-clavicular articulation. At the same time the left testicle became swollen. No other joints were affected; he thought himself to be suffering from rheumatism, but medicines which he took were without effect. He had had gonorrhœa four years previously, but it did not cause him much inconvenience. He had never had any sore on the penis nor had he ever observed any syphilitic manifestations. His condition on Dec. 16th was as follows. He was very pale and thin and looked ill. He felt weak and had no appetite. There was swelling over the left sterno-clavicular articulation, entirely obscuring the surface anatomy of the part. The swelling extended on to the sternum towards the middle line and seemed probably sub-periosteal at this part. The skin was dusky-red and great pain and tenderness were complained of in the part. Any movements of the left upper extremity were accompanied by great pain and were on that account of a limited nature. The diagnosis lay between sub-periosteal suppurating gumma over the manubrium and pyæmic affection of the articulation. Against the former was the absence of history or signs of syphilis, while in favour of the latter was the fact of the patient having contracted a gonorrhœa a week before the commencement of the joint affection. It was decided to put him on iodide of potassium on the chance of it doing good in either affection, and he accordingly received ten grains thrice daily with fifteen grains of bicarbonate of potash. The arm was supported in a sling. In three days after this (Dec. 19th) the dusky-red swollen area was white, the swelling was very much down, the pain was gone, and the patient was feeling much better generally. He was still unable to put on his coat on account of stiffness with pain on exertion. On Dec. 23rd the swelling was again present, and hot fomentations were ordered, while he was directed to continue the iodide mixture. The swelling at this date was situated definitely over the joint. On Jan. 6th, 1897, the swelling was more prominent and fluctuant. A small incision let out a few drops of reddish-yellow turbid serum, and through the wound greyish granulations prolapsed. A probe passed both outwards and inwards, along underneath the skin for an inch or so, but not into the joint. By another week the patient could move his arm freely, the swelling was very much lessened,

and at the seat of incision was a small bud of granulations. At the end of January there was still a sinus leading backwards to the joint. Below the articulation there was some thickening of the sternum, while the end of the clavicle was pulled upwards, apparently from softening of the ligaments. The joint was well defined in its surface anatomy. On account of the sinus persisting he was sent into the Western Infirmary, where the granulations were scraped out under chloroform by Dr. Hector Cameron. In March of the present year (1897), when I last saw the patient, the following note was made:—The sinus had healed; there was some projection upwards of the sternal end of the clavicle, with some fixation of the joint and soft grating on movement (extra articular?). The patient was feeling quite well again.

Remarks.—The case seems to me to be of sufficient interest to warrant my publishing it, my object in so doing being to suggest the connexion between the joint affections in gonorrhœa and pyæmia. Unfortunately, the surroundings of the case prevented my investigating it bacteriologically, and thus I am unable to say what micro-organisms, if any, were present in the joint effusion. The characters of the affected part both before and at the operation resembled those seen in pyæmia, added to which is the fact of the common selection of the sterno-clavicular articulation in that constitutional condition. The effect of medicinal treatment is interesting, the exhibition of iodide being followed by very sudden improvement, and this again by gradual progression towards suppuration. The behaviour of the part after operation was very satisfactory, and the patient was left very little the worse for his illness. Without drawing conclusions from a single case I have noted the following points as being of interest:—(1) Early appearance of joint complication in the course of the disease (seventh day), associated with orchitis; (2) acute process, affecting periarticular tissues subsequently; resulting deformity of joint; (3) response to medicinal treatment and relapse; and (4) subsequent favourable termination of the case after operation.

Glasgow.

Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF GUNSHOT WOUND PENETRATING THE CHEST: A PATHOGNOMONIC SIGN OF HÆMOTHORAX.

BY W. J. ERNELY SUMPTER, L.R.C.P. LOND., M.R.C.S. ENG.

PENETRATING gunshot wounds of the chest are perhaps sufficiently rare in civil practice to justify a short record of the following case in the columns of THE LANCET.

On April 7th, 1897, I was called to see a man who, it was stated, had just shot himself. I found him lying on his back and evidently much collapsed. On examination a wound was found penetrating the chest wall just two inches above the left nipple in the third intercostal space. The bullet had passed out at the back in a slightly higher position, the wound being just four inches from the spine and five inches from the top of the scapula. The scapula was apparently not damaged, neither were any of the ribs. The former escaped owing to the position of the arm at the time of the injury, as was ascertained later, the left arm having then been raised to a right angle with the trunk and the forearm drawn forward slightly across the chest, to give a support to the pistol which was held in the right hand, and the trigger pulled with the thumb. The weapon was an old Enfield revolver, and the bullet, after penetrating the chest, passed through a notice-board and a wooden partition into an adjoining room, where it was found very much flattened on the floor. The shock was very pronounced, the pulse being very weak and rapid, and at times almost imperceptible. There was very little bleeding externally. On applying a stethoscope to the chest coarse râles were heard all over the left lung below and about the wound, and the breath sounds were markedly deficient. Both wounds were gently examined with the finger, and no extraneous matter being found they were carefully