

deformity, and so far as my experience has gone it is a permanent cure for this troublesome condition. The surface left by rolling up the strip of mucous membrane readily granulates over and causes no inconvenience. Tension in the strip of tissue must of course be avoided and care must be taken that the surfaces of the roll are properly and completely bared and their vascular supply not interfered with by drawing the stitch too tight. The operation is best done under general anaesthesia, as unless the tissues are manipulated delicately the blood-supply of the little strip will be injured and necrosis will take place.

Harley-street, W.

THE
TREATMENT OF SCIATICA, ARTHRITIS
DEFORMANS, AND SCLERODERMA BY
SUPERHEATED DRY AIR (THE
TALLERMAN SYSTEM).

A REPORT FROM THE LANDESBAD AT BADEN-BADEN.

BY DR. FR. NEUMANN.

It is seldom that a specific method of treatment withstands the test of years and continues to fulfil its original promise so well as the Tallerman system for the application of superheated dry air. The apparatus itself has been so frequently described that I may confine myself to a brief indication of its essential features, though there are, on the other hand, thousands of physicians who have not yet seen it. Two different forms are used: (1) for the pelvis; and (2) for the extremities. The apparatus can be heated by electricity or by gas or even by oil, and the temperature in the interior is brought up to 300° F. That such temperatures are actually reached in the upper part of the cylinder is proved by the reading of the thermometer affixed to the top; but whether temperatures so high as the thermometer indicates are maintained inside in an equal degree—whether a limb lying in the apparatus is surrounded by a uniformly heated atmosphere so that we can speak of the *continuous* action of superheated air when once the maximum is reached—that question has hitherto been a matter of assumption. I have endeavoured to solve it in a simple manner. When any portion of the body is inserted in the cylinder the floor on which it rests is protected by a cushion of asbestos resembling a thick layer of felt. Above this and around the limb a covering of woven asbestos, which is like lint in appearance, is disposed. The patient must be completely undressed and comfortably wrapped up in loose cotton wraps and blankets on account of the profuse perspiration which usually occurs during and after the sitting and also to ease the respiration and the action of the heart. Obviously the limb is not exposed to the direct action of the hot air, and for this reason—that if it were left uncovered the *radiant* heat from the metal falling on to the skin must have either a scorching or at least a very irritating and painful effect. The loosely clothed portion of the body inside the apparatus experiences in general no disagreeable sensations from the heat. Where the covering comes into direct contact with the skin the feeling is only one of moderate warmth, but where between the folds hot air has free access to the cuticular nerves one has the sensation of a very intense but comforting heat. The dry air enveloping the limb must obviously draw from it a large amount of moisture through the difference of temperature and saturation; and it follows from elementary physical laws that as large quantities of moisture are withdrawn more and more blood is forced to flow from the deep-seated tissues, where it is cooler, to the heated surface and into the dilated vessels of the skin. For a closer examination of these processes, however, further investigation is needed.

It is a fact that the coverings in which a limb rests when under treatment become moist and that occasionally in a fold of asbestos shut off from evaporation a small quantity of water—unquestionably the product of condensation—may collect; and yet such moisture never becomes superheated, for otherwise scalding would occur, and this we have never observed at the Landesbad in upwards of 2000 applications. Nor is a single case of scalding noted in the whole of the English literature which I have perused. It is a matter for

regret that in dealing with such an exceedingly beneficent method of treatment as this all the internal processes should not yet be fully known. Certain it is, however, that the withdrawal of moisture from the limbs must be accompanied by considerable changes in temperature, and further that it is impossible to speak of a constant dry heat in view of the fluctuations in temperature and moisture. In order to obtain at least some authoritative data for commencing the investigation of these points I had a maximum thermometer constructed which can be placed between the asbestos coverings during the sitting and read afterwards. The following table gives the temperatures noted:—

In the apparatus. Degrees Fahrenheit.	Maximum thermo- meter. Degrees Fahrenheit.	Difference. Degrees Celsius.
225	179.6	25.0
230	195.8	19.0
220	194.0	10.5
260	230.0	10.8
238	212.0	14.0
220	190.0	16.0
250	230.0	11.2

This table shows that inside the cylinder in the course of an hour's use considerable variations in temperature occur, which certainly cannot be without influence on the contents of the superficial blood-vessels and on the amount of evaporation. Immediately after leaving the apparatus the limb is injected and of a uniform red, but has not the slightest appearance of cyanosis or stasis. During treatment the whole body falls into a pleasant perspiration; the pulse is accelerated by some 10 to 20 beats in the minute, but is not noticeably full or dicrotic, still less small and irregular. Cardiac or cerebral sensations of a disagreeable character only occur in highly nervous patients, in whom the mere apparatus—or the "oven" as people often call it—of itself excites alarm. With increasing experience and observation I have been able, as others have done, to apply the treatment without anxiety to patients suffering from arteric-sclerosis, myocarditis, and moderate valvular disease.

Here, as elsewhere, observations of the temperature taken in the mouth or axilla have shown that there is never an important increase in the body-heat, the rise scarcely reaching ½° Celsius as a rule. This conclusion is confirmed by the fact that treatment never induces albuminuria, but rather that it diminishes existing albuminuria from organic kidney disease.

English writers represent the curative action of the treatment in a light which we cannot altogether endorse. My own belief is that super-heated dry air will come much more into general use as a therapeutic agent and will obtain permanent recognition if attention is directed strictly to the results derived from a wide field of observation. Among the English contributions to the subject we find the statement repeatedly made that the local action in a limb or joint on one side of the body benefits the corresponding part on the other side in a striking manner. I willingly admit that the general stimulation of the circulation and of perspiratory excretion may produce general relaxation of the tissues and relief from pain, but our observations afford no evidence that a curative effect is actually transferred from one side to the other by a sort of sympathetic action—whatever that may mean. Equally doubtful, in my opinion, is the assertion that in arthritis deformans, for instance, or in neuralgia such as sciatica, a striking and immediate remission of pain sets in. Nor is the reduction of swollen joints effected so rapidly as is stated in many reports. On the other hand, it is unquestionable that in many cases the curative action continues after treatment. The improved circulation and marked stimulation of the lymphatic system lead in many cases to vigorous nutrition of the parts affected; and so it happens that patients are discharged, going somewhat dejectedly away on crutches and sticks apparently unimproved and uncured, of whom we subsequently hear that improvement, cure, and ability to return to work have been gradually established. It is also much truer to nature that the healing process should follow this course than that of suggestive and miraculous change. Further, the gradual improvement in the condition of atrophied muscular tissues, the increase

in power and bulk of wasted limbs, can only proceed by degrees and by means of improved nutrition. We notice this strengthening of the muscular system after the application of the Tallerman treatment even in cases in which, for the sake of experiment and observation, we have given up the simultaneous use of the Zander exercises. Whether we shall succeed, as some enthusiasts believe, in completely suppressing arthritis deformans, for instance, or in abolishing it altogether out of existence will appear highly doubtful and unlikely to every physician familiar with this terrible disease.

Observation has shown that this treatment, energetic as it seems to be, produces no ill effects either on the local seat of mischief or on the whole system. In particular we have never been able to discover that it causes any wasting or has a lowering effect on the general strength, although it is so powerful and compressed into so short a space of time. On the contrary, in precisely the most successful and at the same time the severest cases the general health and appearance have notably improved, through the relief from pain, as we must suppose, and the powerful stimulation of the circulation.

In this general survey my object has been to show how the hot air acts, and I believe that I have correctly defined the scope of its action. Just because the Tallerman treatment is a blessing to so many invalids I have impartially depicted light and shade to the best of my knowledge. With regard to the application of the treatment to the cure of particular classes of disease much has been written already in England, America, France, and Germany. In Germany the Baden Government, at the instance of the Minister of Medicine, arranged with Mr. Tallerman in the year 1898 for the installation of his apparatus for the public use at the Landesbad, the great State institution for gout, rheumatism, neuritis, and heart disease, and also at the Friederichsbad, the well-known thermo-hydropathic establishment for private patients. As senior physician to the Landesbad I have myself had abundant opportunities of employing the treatment. In order to appreciate the results properly it should be noted that the majority of the patients at the Landesbad are recruited from the necessitous classes—that is to say, we have agricultural labourers, factory work-people, public servants much exposed to the weather and to great physical exertion, such as railway and custom-house employes, together with the women belonging to the same class of life. It is no wonder, therefore, that abundant material for the hot-air treatment should be forthcoming. We have a large number of the severest cases of so-called sciatica (190 cases in 1900), in which the form of illness and its incapacitating effects vary according to the seat of the disease and the acuteness of the attack. True gout is comparatively rare among our patients. On the other hand, affections resulting from acute arthritic rheumatism and—whether allied to them or independent—the various forms of chronic articular rheumatism and the so-called arthritis deformans, into the pathology of which I will not enter here, are all very common (about 300 cases).

It is precisely in dealing with the foregoing maladies that the hot-air treatment is most valuable. The position of physician to an establishment like the Landesbad no doubt gives one the opportunity of gaining vast experience in a particular direction; but, on the other hand, it is one's duty to keep testing again and again the value of the old-established means—hot springs, hot air, and vapour baths—and to apply the combination of these with fango and exercise on parallel lines to the same morbid conditions. To enter fully into the details of this procedure would carry me too far afield, but this much I can say—that both at the Landesbad and in private practice the patients submitted to the Tallerman treatment have been the bad and very bad cases only.

Speaking generally, my indications for the treatment correspond with those set forth more particularly in the English literature. There the morbid conditions dealt with are chiefly rheumatic neuritis, chorea, gout, chronic rheumatism, rheumatic arthritis, stiff and swollen joints, sprains and ruptures of joints, fractures, inflamed flat-foot, &c. In England, on the other hand, they have also treated eczema, of which I have had no experience, whilst for my part I have had the opportunity of treating subacute nephritis, three cases of scleroderma, and one of myxœdema. In the course of the year we have applied the treatment to cases of sciatica and lumbago (70 cases), arthritis deformans (35 cases),

chronic arthritic rheumatism, badly-mended fractures with interruption of the circulation, severe sprains of the pelvis and spine, painful cicatrices and contractions after gunshot wounds, three cases of scleroderma, one of myxœdema, and also cases of inflamed flat-foot. No result whatever was obtained in three cases of sciatica, in one of sciatica and lumbago with special involvement of the ileo-inguinal nerve, and in one of ankylosis of the knee-joint following operative removal of rice-seed bodies. Unequal results were obtained in two cases of arthritis deformans, the hands being improved as regards swelling and mobility while the knees remained unaffected and very painful. Unimproved also were two cases of apparently old fracture of the neck of the femur with severe concussion of the pelvis, and hardly any success was obtained in one case of inflamed flat-foot and one of scleroderma, in which only the hands were relieved. All the remaining cases were either substantially improved or completely cured. In many cases the improvement is of such a character as to make a truly wonderful impression upon the patients and their friends, and it may be said of them that they would otherwise remain absolutely incurable. I append a few such cases.¹

SCIATICA.

CASE 5.—The patient was a man who had to travel a great deal. The cause of his illness was repeated chills; otherwise he was quite healthy. There were bilateral sciatica, extreme pain, and insomnia; the slightest movement—walking, sitting, or standing—was impossible; the gluteal nerves were particularly affected. He was unable to leave his bed for five months. All previous treatment was useless. Pelvic Tallerman treatment, alternating with natural baths, were given. Complete cure resulted in two months. The patient, who would otherwise have had to give up his livelihood, now carries on the whole of his exacting business as before. The cure is now of seven months' standing.

CASE 222.—The patient was a woman who had overstrained herself while sick-nursing and was supposed to be suffering from inflammation of the right hip. She had been under treatment in the hospital for three months without any improvement worth mentioning. On examination she was found to have gluteal sciatica. The hip was freely moveable; there was total inability to walk. She had great pain even in bed. Pelvic Tallerman treatment was given; there was complete cure in four weeks. There has been no return.

CASE 92.—The patient was a man who had severe sciatica following fracture of the neck of the femur. He had violent pain, atrophy of the muscles of the thigh, and was unable to walk for months. Pelvic Tallerman baths were given; he walks freely and without pain.

CASE 107.—The patient was a woman suffering from bilateral sciatica; she was sent to me after being bedridden for six months for osteo-malacia. She was deprived of almost all power of movement in the pelvis and legs; she tried to walk with a supporting frame, such as little children use. Double sciatica was diagnosed. Pelvic Tallerman treatment was given; in six weeks the patient left the institution walking easily with a stick, but had a return after getting a chill in the kitchen.

CASE 116.—This patient had a stiff knee; the thigh was flexed, there was pain in the left sacro-iliac joint and wasting of the left thigh; the patient had to be carried and could only walk with a stick by the greatest effort. Complete cure resulted and she now walks easily.

CASE 129.—The patient had bilateral sciatica; there were pain in the sacrum and sacro-iliac joint and shooting pains in the ileo-inguinal regions; the patient walked bent double and there was wasting of the left thigh. Result: the patient is completely free from pain and walks upright.

CASE 292.—The patient had ankylosis of the spine, lumbago, and sciatica, under the guise of coxitis; there was inflammation of the shoulder-joint and the arm could scarcely be raised to the horizontal position. Result: there is free movement of the hips, the spine can be flexed and turned, the arms can be raised high without pain, and the patient walks well.

CASE 474.—The patient had left sciatica; there were wasting of the gluteal muscles and pain in the gluteal nerves; the sacrum and sacro-iliac joint were painful; the right shoulder moved with difficulty. Complete cure resulted.

¹ Some case-notes from private practice are included; the rest are from the Landesbad.

CASE 643.—The patient had inflammation of the left hip-joint. On examination a diagnosis was made of gluteal sciatica only; the patient had been treated with weight and pulley for six months and was sent to us by an eminent surgeon as probably suffering from sciatica; a few steps only could be taken on two crutches and with great pain. Pelvic Tallerman treatment was given and the patient walks easily with one or two sticks.

CASE 710.—This patient arrived quite bent double and was scarcely able to walk. There was left sciatica, the gluteal nerves were particularly affected, and there was atrophy of the left gluteal muscles. The disease was of six years' standing. Pelvic Tallerman baths were given; great improvement resulted, and the patient can go to work and bends and turns the lumbar spine without pain.

ARTHRITIS DEFORMANS.

CASE 3 and 720.—This patient since 1899 had suffered from gradually increasing stiffness of both shoulders and could not raise the arms; the left wrist was stiff, the knees and the ankles were swollen and painful, and the fingers were stiff. The patient had to be carried into the Landesbad. Walking or writing could not be done and the patient was perfectly helpless. After a course in the spring and again in the autumn the patient got completely well, is free from pains, and walks, writes, and raises the arms above the head.

CASE 253.—The patient had arthritis deformans of the hands and all the finger joints; it had been gradually coming on for four years. The patient was unable to work. After treatment the right wrist was somewhat stiff, but the fingers were no longer swollen or painful and were freely moveable. The fingers can now be flexed, writing and knitting can be done, and the patient is fit for work again.

CASE 375.—The patient had arthritis deformans following influenza of two years' standing; the ankles and knees were attacked and the hands were severely affected. The patient could not work. After treatment walking was easy and the hands were free from swelling and pain. The patient can now return to work.

CASE 43.—The patient had typical arthritis deformans in both knees and in 1899 could not walk, had to be carried, and left the institute walking with sticks. In 1900 there were further improvement and perfectly free movement. The patient is completely cured.

CASE 44.—The patient had arthritis deformans of both knees, which were stiff and fixed at an angle. After treatment the swelling disappeared, there was free painless movement, and the patient walked upright.

CASE 78 and 870.—The patient had arthritis deformans of both knees and ankles. There were atrophy of both thighs and calves and pain in the sacrum. On arrival in the spring the patient could not walk, had to be carried, and could not rise from the sitting posture without help. The right shoulder was stiff. Result: swelling of the knees has subsided, walks easily, and the right shoulder is better. The patient can return to work.

CASE 90.—The patient had severe arthritis deformans of both hands. She could not close the hands and could not follow her calling as teacher. After treatment the hands were still somewhat swollen but were freely moveable. There was progressive improvement after discharge, so that the patient is now completely free from disease and fit for work.

CASE 135.—The patient had rheumatic ankylosis of the lumbar and middle vertebræ; the spine was slightly scoliotic but absolutely immovable, like a fixed splint; bending and turning were impossible; the knees were swollen and painful. After treatment the spine could bend and turn, though movement was limited, the knees were free, and the patient is fit for work within limits.

CASE 654.—The patient came in 1899 with arthritis deformans in the knees and ankles and flexure of the hip. He had to be always carried and he left apparently without any improvement. Some months later the swelling of the affected joints subsided. The patient was free from pain and walked well, but as the same trouble still remained in the right ankle he underwent another course in 1900, and left the hospital a capital walker and a thoroughly healthy man.

I add here some other diseases which have undergone the Tallerman treatment. Highly interesting, and the first successful one of its kind, is a case of scleroderma, which I

shall describe somewhat more in detail, as this disease has not previously been treated by the Tallerman method.

SCLERODERMA.

CASE 236.—The patient was a woman, 46 years of age, in whom the disease had begun six years before. The cause was unknown. The skin was affected on the abdomen and chest, almost the whole of the back, the feet, and the lower part of the legs, knees, fore-arms, and hands. As for the last, the disease was so far advanced, particularly in all the fingers, the left wrist, and the back of both hands, that the skin could not be moved in the slightest degree. With fingers crooked like talons and standing out from each other, the hands presented a rigid whole as if chiselled out of stone, and the illusion was such that in examining them one was almost afraid of snapping a finger right off. The woman could scarcely walk, as the legs and feet were similarly affected, and, moreover, the sclerosed skin at every attempt to move and even spontaneously, particularly at night, caused her maddening pain. The sensibility of the skin was preserved, but, on the other hand, not the slightest sign of perspiration could ever be produced even when the affected parts were exposed to the hottest sun. The mail-like skin on the back and chest prevented proper respiration. The heart, urine, and lungs were free from abnormal signs. The patient presented an appearance of frightful misery and wretchedness. Her features were also distorted by pain, for the disease had begun to attack the face. In the year 1879 I published a case of scleroderma in Virchow's *Archiv* in which I had attempted to ascertain the condition of the sweat glands by pilocarpine injection, but without any success in inducing perspiration. I had also removed a piece of diseased skin and made some microscopical sections. Of the sweat glands some thin threads could still be distinguished embedded in dense fibrous tissue. With this experience in my mind I had recourse in the present case to the Tallerman treatment with very faint hopes. After a few sittings, however, perspiration was induced not only in the unaffected parts, but also in the hands and feet under treatment in the apparatus. The pains subsided, the skin began to be moveable again, the fingers lost their claw-like appearance and could be brought closer together. The patient began to walk better. After a stay of four weeks she left the institution. On Oct. 11th she returned and informed us that the improvement had steadily progressed. Her appearance was materially better; her previously depressed frame of mind had given place to a lively expectation of becoming once more able to work. She walked with ease, and could sit down and get up without any of the difficulty and pain she had previously felt, and the skin was looser. Even in the hands, which were still in need of further improvement, though the fingers could almost be closed, she had the feeling that they "were alive again." At the beginning of 1901 she could write, knit, walk, was free from pain, and much stronger.

MYXŒDEMA.

CASE 652.—The patient was an unmarried woman, 34 years of age, previously healthy. In 1898, after being severely poisoned by gas, she began to suffer from myxœdema, which chiefly attacked the lower part of the back, the buttocks, and the thighs. She was for some time in the hospital for nervous diseases at Strasburg, and was sent to me from there. She was very anæmic and very depressed; she wept readily and was somewhat weak mentally. She could scarcely walk and had to be half carried into the Bad. The skin was greatly thickened, pale, doughy, infiltrated, and scarcely moveable on the underlying tissues. She was first treated with inhalations of oxygen and hip baths. As soon as she became somewhat more composed the Tallerman treatment was applied. The skin became distinctly thinner and more moveable; she improved greatly in appearance and strength, and eventually could walk by herself not only into the town but to the old castle, a distance of three miles with a rise of 600 feet.

The improvement in this case cannot, of course, be attributed to the hot-air treatment alone, but it had, at any rate, a favourable effect on the condition of the skin. In sciatica and chronic articular rheumatism I have seen good results obtained in a great many cases by combining other methods of treatment—for instance, by alternating ordinary warm baths with hot air or hot air with fango, and that in very severe and old cases. But in the end one picks out the most hopeless and intractable cases for the Tallerman

treatment, and I am bound to say that there has hitherto been no method of treatment so capable as this of improving arthritis deformans as to effect the abolition of pain, the restoration to work, and a new lease of life. Such cases could only be compared in their hopelessness with far advanced pulmonary tuberculosis. All that we could previously give these unfortunates was pity and some mitigation of suffering. The Tallerman treatment has accomplished a most gratifying revolution in this field of medicine and is worth more than all previous remedies put together. The improvement obtained in ankylosis of the spine, which is closely connected with arthritis deformans, justifies us in entertaining hopes for many departments of orthopædic surgery, and the success in scleroderma described above places this disease, which has hitherto been regarded as incurable in its severer forms, in a more favourable light from the therapeutic point of view.

NOTES ON

A CASE OF TEMPORO-SPHENOIDAL
ABSCESS FOLLOWING MIDDLE-EAR
SUPPURATION; OPERATION;
RECOVERY.

BY PERCY JAKINS, M.D. DURH.,

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A MAN, aged 24 years, was admitted into the Central London Throat and Ear Hospital on August 21st, 1899, complaining of great nausea and giddiness and an excruciating headache over the frontal and occipital regions and on the right side of the vertex. There was a clear history of phthisis, four of his relatives having died from this disease. The patient had had whooping-cough at the age of four years, and measles when he was a year older; when he was 10 years old he had scarlet fever, and three years previous to the time of his admission to hospital he suffered from influenza; the ears had not been affected in any of his illnesses. For two years he had had a discharge from the right ear, the cause of which was unknown. Five months before admission he attended a special hospital for this discharge; a polypus was removed, and he was told to syringe his ear with a lotion and to have a white powder blown into it, but neither the removal of the polypus nor the treatment prescribed caused any diminution of the discharge which became offensive. 17 days before admission (August 4th) the patient was said to have complained for the first time of pain about the right ear (especially over the mastoid) which extended to the head and was accompanied by vomiting on that day. The pain increased in severity during the next seven days and Dr. John Cross of Gloucester-road, N.W., who was called in, found the patient suffering great agony; the patient's sufferings were somewhat relieved by the free use of sedatives. On August 14th he appeared so much better that he went out for a walk for a couple of hours, and on the evening of the same day was able to play the piano; next day, however, he relapsed into his former state and became worse, and a second attack of vomiting occurred. The patient's appetite appears to have kept very good, but his relatives had noticed that for some four months before this attack he constantly complained of being cold, and was accustomed to crouch beside the fire, although it was warm weather; there was no history of a distinct rigor. The temperature was noted from the 16th until the date of his admission; the highest recorded was 101.4° F. on the evening of the 20th; the lowest was 98.4° on the morning of the 19th. The bowels had been very constipated, necessitating the free use of aperients.

On admission the temperature was 99.4° and the pulse was 64. The patient had severe pain all over the right side of the head, the right mastoid was very tender on pressure, and there were marked giddiness and nausea; the complexion was very pale, there were sordes on the lips and tongue, and the breath was decidedly offensive. The patient was heavy and drowsy, his speech was slow, and his body was much wasted. On examination the meatal

canal was found to be full of offensive pus, and when this had been removed there was seen to be a distinct bulging of the superior and posterior meatal wall. On the following day (August 22nd) the patient, whose temperature was 98.4° at 10 A.M., was placed under chloroform, the part having been previously shaved and rendered aseptic, and a semilunar incision was made over the right mastoid from the lower border of the temporal muscle to the apex of the mastoid, the periosteum was reflected, and the cartilaginous part of the meatus was separated from the osseous. The ear having been drawn forward the antrum was explored and was found to contain granulation tissue and cholesteatoma; this was curetted. The attic was found to be in a similar condition and was treated in the same way, and a communication was found leading to the middle fossa, the dura mater being exposed. The skin incision was carried upwards, the temporal muscle was divided, the periosteum was reflected, and a piece of bone was removed by the trephine. As the dura mater looked healthy and there was no bulging I decided not to explore the cerebrum, feeling sure that if an abscess was there it would make its way towards the point of least resistance. The wound was packed with iodoform gauze and the patient was put back to bed. On the next day the patient felt decidedly better, the headache was less, and he had slept fairly well; the highest temperature for the day was 99.4°. On the following day he expressed himself as feeling quite well; the highest temperature for the day was 99°. On the 25th the patient suddenly became exceedingly restless and complained about noon of severe headache, especially over the occipital region. He soon became drowsy and then comatose, and the nurse noticed that he did not move his left arm or left leg. I was sent for, and I found that the patient had complete left hemiplegia. Chloroform having been given, on removal of the packing the dura mater was seen to be bulging through the trephine opening. The dura mater was incised, a medium-sized trocar and cannula was then driven into the brain-substance for a distance of one and a half inches, and on withdrawing the trocar a very offensive pus escaped. A Horsley's pus seeker was next used and the abscess cavity was emptied of its contents, about two ounces. A large drainage-tube having been passed into the cavity the wound was packed with gauze. The temperature was 97.4° at 6 A.M. The evening temperature (taken at 5.30) was 103.0°. The patient was very restless, continually moving his right leg; in a short time he began to move his left leg. Next day (August 26th) he was better and could move his left arm and leg; the highest temperature for the day was 102.8° at 2 P.M. On the 27th the highest temperature for the day was 101.2°. On the 28th, as the patient was very restless and almost maniacal, shouting and trying to get out of bed, the night nurse was obliged to send for my colleague, Dr. Peter H. Abercrombie, who prescribed 40 grains of bromide of potassium, followed in half an hour by a subcutaneous injection of one-third of a grain of morphia; after this the patient slept well. The highest temperature for the day was 101° at 10 A.M. On the next day the drainage-tube was removed, cleaned and shortened, and re-inserted; the highest temperature for the day was 100.4 at 2 A.M., and it was thenceforth normal. The patient made an uninterrupted recovery. The tube was removed on Sept. 20th and he left the hospital two days afterwards, having been resident for 33 days. I examined him on Dec 9th and found him quite convalescent. To use his own words, "he felt better than he ever did," and he had gained weight and strength.

This case, I think, bears out the opinion which I hold that the presence of a polypus or granulation tissue in the external meatus indicates trouble in the antrum or attic or both, and that simple removal of the growth through the external meatus in no way touches the disease which is causing the trouble. It also illustrates another point—namely, that in cases of suppuration from the middle ear which do not yield rapidly to treatment the advisability of the radical operation should be seriously considered, not only with the view of arresting the discharge from which the patient suffers but to prevent deeper mischief, such as cerebral abscess. Within the last two years I have operated upon four cases of cerebral abscess caused by extension of mischief from the middle ear.

For the full notes of the foregoing interesting case and for the necessary after-attention upon the patient I am indebted to my colleague, Dr. Abercrombie.

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