

**Paralysis especially of one deltoid muscle in a patient suffering from lead poisoning : preserved electrical reaction of the muscles / by Thomas Buzzard.**

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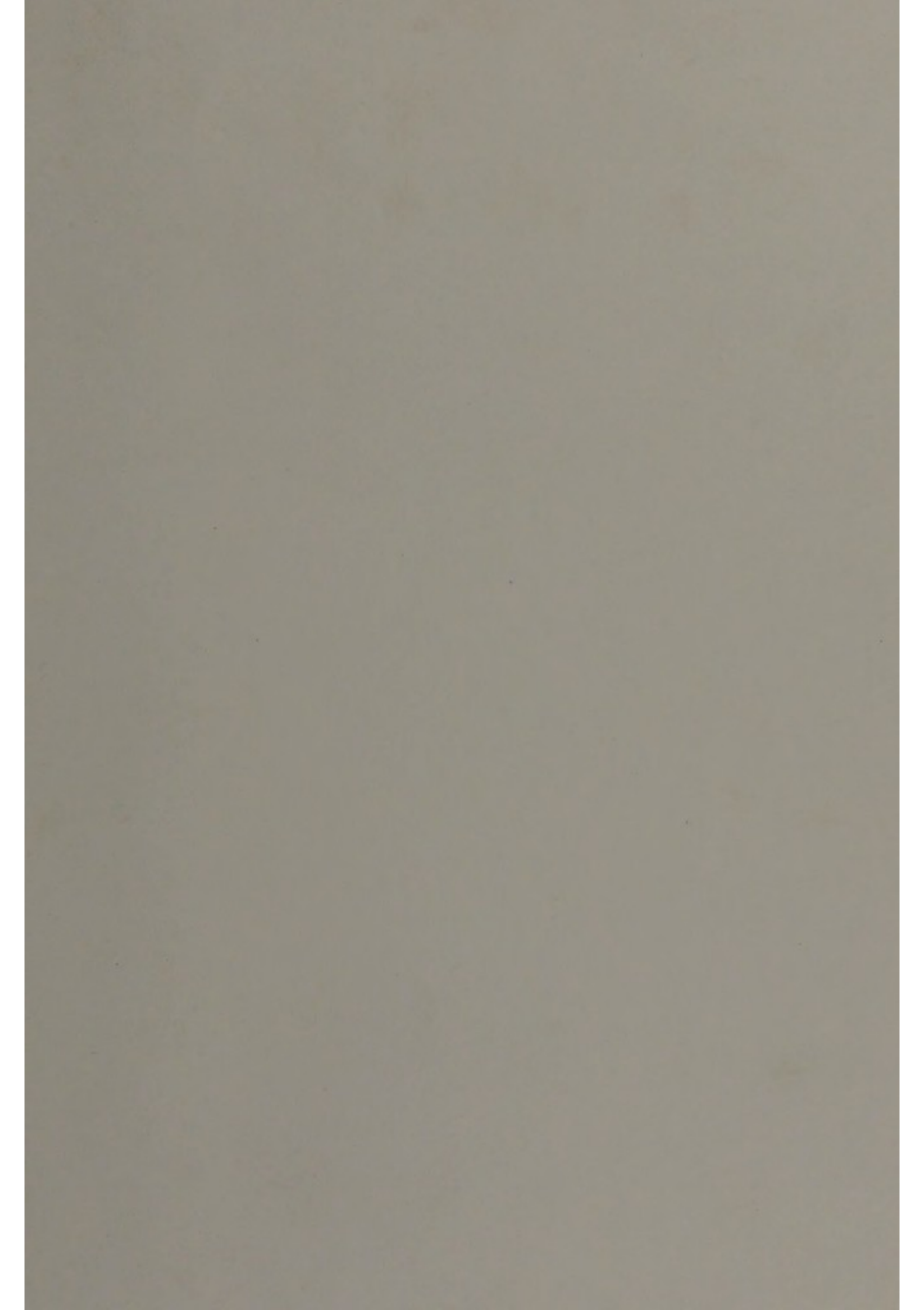
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## PARALYSIS ESPECIALLY OF ONE DELTOID MUSCLE IN A PATIENT SUFFERING FROM LEAD POISONING; PRESERVED ELECTRI- CAL REACTION OF THE MUSCLES.

BY THOMAS BUZZARD, M.D., F.R.C.P.

*Physician to the National Hospital for the Paralysed and the Epileptic.*

E. G., æt. 45, a house painter, was admitted into the National Hospital for the Paralysed and the Epileptic on October 8th, 1889, when the following notes were taken by Dr. Taylor, House Physician :—

Patient was in his usual health until three weeks ago, when he was suddenly seized with severe abdominal pain and constipation which yielded after three or four days to treatment. He then noticed that his hands and his shoulders, especially the left, were weak. For several weeks before the abdominal attack he had observed some weakness in both thumbs—a difficulty in abducting them, and a cramp-like pain in both little fingers. He had also noticed for some time past shakings in both hands, and this at times during the past summer had been so bad that he had been forced to stop work for a while. He had been obliged, for example, to employ both hands in taking a cup of tea. There had been, besides, pain in the left knee and both shoulders, and also in the left elbow. He had had no headache.

Five weeks before admission he had accidentally cut the back of his right hand with glass.

The patient had enjoyed good health, with the exception of occasional attacks of colic. In his work as a house-painter he had to do much "flatting." He is married, and has six children all healthy, and his wife had had no miscarriages.

On admission, patient is a healthy-looking man, complaining of weakness in the hands and arms, especially on the left side, and pains in the knees. Nothing wrong is to be noted about the face and head. There is a well-marked blue line on both upper and lower gums. All movements of the fingers are carried out fairly well, but with tremor, and there is a tendency to flexion of the fingers at the metacarpo-phalangeal joints.

*Right Arm.*—The thumb is kept in a position of flexion at all the joints. Flexion, adduction, and opposition are carried out



fairly well, but with tremor; extension and abduction cannot be performed.

In the wrist the movements of flexion and extension as also ulnar and radial flexion and extension are carried out with fair power. Extension at the wrist is certainly the weakest movement. The movements of the elbow and shoulder-joints are good.

*Left Arm.*—There is here also a tendency to flexion at the metacarpo-phalangeal joints. The fingers however can be extended, and flexed, and separated from each other. The condition of the thumb is similar to that on the right side.

At the wrist all movements are carried out, but extension is executed feebly, and with tremor.

*Left Shoulder.*—The arm cannot be raised any distance from the side, nor can the extended arm be retained at a right angle to the trunk, or raised above the head. In attempts to do this much fibrillary contraction is noticed in the deltoid muscle.

Tremor is present when attempt is made to do anything, and this is equally well-marked in each hand. Fibrillary twitching is apparent in the forearms, especially on the extensor surface. There is no incoordination of movement. The elbow and wrist jerks are active and equal.

In the lower extremities all movements are carried out well, and there is no marked tremor. The knee-jerks are active and equal; there is no ankle-clonus; the plantar reflex is active and equal. Nothing wrong is to be noted in the thoracic and abdominal cavities. The urine is acid, sp. gr. 1020; no albumen; no sugar.

Examined electrically it is found that all muscles of both arms and hands—including the deltoids—react equally to a faradic current of a strength not greater, as far as can be judged, than would be necessary to cause contraction in healthy muscle. Reaction to the galvanic current is normal.

During patient's stay in hospital some little atrophy of the left deltoid became observable, but the electrical reaction continued normal.

Primary paralysis of a deltoid muscle in a case of lead poisoning, although rare, is by no means unexampled. Duchenne (de Boulogne), in his "*Electrisation localisée*," remarks: "The deltoid muscle is sometimes paralysed primarily," and refers to a case which he saw in hospital. The patient was affected with paralysis of the right deltoid consecutive (as in this patient) to several attacks of lead



colic. In Duchenne's patient, however, the middle fibres of the muscle had completely lost their faradic excitability, which still remained, but in a very feeble degree, in the anterior and posterior third. In the case which I bring forward the most remarkable feature is the preservation of electric excitability, of which I do not remember to have seen another example in a case of lead paralysis, where the loss of power was as complete as it was in this case. Indeed, the converse is what is to be expected. In an early number of this Journal<sup>1</sup> I pointed out that some muscles supposed by a patient suffering from lead paralysis to be healthy and unaffected, showed great diminution of faradic excitability, a point which had also been dwelt upon by Erb and Bernhardt before me.

When this case first came under my care a serious question arose in my mind (from observation of the electrical condition) as to the bona fides of the patient. But I soon came to a definite opinion that simulation was out of the question. The weakness of extensors shown by the tendency to flexion of the fingers and wrist, the tremor, the very distinct blue line, coupled with the history of repeated colic, bore powerful evidence as to the genuineness of the case. But most striking of all, perhaps, was the action of the man when asked to lift his elbow away from his side. Instead of alleging his incapability of doing so, he would make strenuous efforts to bring up his elbow, by employing the pectoralis major muscle in a manner unmistakeably characteristic of a case of deltoid paralysis.

Moreover, although on his admission no atrophy of the left deltoid was to be found, a perceptible thinning of its fibres occurred during his stay in hospital. Lastly, the man always endeavoured to make the best of his condition, and was with difficulty persuaded to remain in hospital, as he thought he could manage to do a little work.

When this patient was exhibited before the Neurological Society of London, at its meeting on November 21st, the preserved electrical reaction of the deltoid muscle was demonstrated, in my unavoidable absence, by Dr. Taylor.

<sup>1</sup> *Brain*, Vol. i., page 121.

