

ON THE PROOFS OF THE  
**PRESENCE OF FREE MURIATIC  
 ACID**

IN THE STOMACH DURING DIGESTION.

By ROBERT DUNDAS THOMSON, M.D., *Physician to the Blenheim-street Free Dispensary and Infirmary.*

THE object of a paper on this subject, read at the Birmingham Meeting of the British Association for the Advancement of Science, was to discuss the nature of the experiments from which the deduction had been drawn by Prout, Tiedemann, and Gmelin, that free muriatic acid exists in the stomach. The author had made varied experiments in order to ascertain whether any acid could be distilled over from the filtered fluid contents both of the human stomach and of the inferior animals; and although he has generally procured traces of acetic acid, he could never detect the slightest indication of the muriatic. This result is in consonance with that of Schultz, who denies that there is any acid in the stomach, save the lactic, and this he admits he has met with in a free state, almost constantly, in the course of a very extended experience. The method adopted by Prout and others to determine whether free muriatic acid was contained in the stomach was to filter the contents of that viscus, to take a certain weight of the fluid, and to precipitate it with nitrate of silver. An equal quantity was taken, evaporated, and ignited; the residue was then dissolved in distilled water, and the solution precipitated with nitrate of silver. The difference between the weights of chlorine in the two silver precipitates was taken as the indication of the total amount of free chlorine or muriatic acid contained in the stomach.

Now, according to Dr. Thomson, this experiment is liable to, at least, one objection, which renders problematical the conclusion, that an indication is thus obtained of the true amount of muriatic acid, if it is not altogether fallacious; for he has ascertained that common salt is decomposed to a considerable extent by various vegetable substances, when they are ignited in contact with each other; and hence the saline matters of the stomach may lose muriatic acid without there being any of this acid in a free state in the stomach.

It has been known for some time that when steam is passed slowly over common salt in a state of ignition, muriatic acid fumes are discharged. Again, when anhydrous sulphuric acid, that is, oil of vitriol deprived of its water, is brought in contact with common salt at a strong heat, part of the acid loses an atom of oxygen, and becomes sulphurous acid; the oxygen passes

to the sodium, and forms soda; the chlorine is evolved along with the sulphurous acid fumes, and the remaining sulphuric acid which has not been decomposed, unites with the oxydised sodium or soda to form Glauber salt or sulphate of soda. Such, then, are two well-known decompositions.

But Dr. Thomson has ascertained, that if oxalic acid be heated in contact with common salt, muriatic acid fumes are discharged in abundance, even at a temperature much below ignition, and the residual salt is found to effervesce strongly in the dilute acids, showing that a portion of chloride of sodium has been converted into carbonate of soda.

Tartaric acid, he has found, when exposed to the same action, to afford a similar result.

With citric acid the same products are generated, and a black residue remains, which contains a considerable portion of carbonate of soda. Saliva appeared to produce some decomposition, and numerous other substances which were subjected to experiment afforded analogous results.

It is quite obvious, therefore, that if any of those bodies which produce such decompositions are present in the experiment of Prout and Gmelin, a portion of the common salt will be decomposed, and the quantity decomposed will depend on the proportion of the decomposing elements present. Hence, this method cannot be a test of the actual amount of free muriatic acid in the stomach, and may afford the free muriatic acid which former experimenters, who have employed it, have concluded to be given off.

There appears to be another source of error in this mode of determining the point; because nitrate of silver will undoubtedly throw down a portion of animal matter from the animal fluid with which it is mixed, and this precipitate will fall down along with the chloride of silver, and increase its quantity above what it ought to be.

Dr. Thomson concludes from these observations, that the subject requires further investigation, as it is one in which the most important function of the human economy is concerned, and one whose condition must enter as an element into by far the majority of diseases which assail mankind.

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FURTHER OBJECTIONS TO THE FORCIBLE  
 RESTRAINT OF LUNATICS.

*To the Editor of THE LANCET.*

SIR:—Dr. Corseillis's candid and able letter brings the question of Non-Restraint into a much smaller compass.

1. He admits, and an able correspondent of his admits, that restraint *can* be wholly dispensed with; so that the question is now

one merely of pecuniary cost and medical expediency.

2. He admits that the cases requiring restraint are very rare, so rare indeed that he had not, at the time of writing, a single male patient under restraint in his large establishment. Others, in the same way, feel justly proud of the extremely small number under restraint, and of its frequently entire absence. What a contrast with the frightful scenes which were exhibited but lately before the agitation of this question, when even idiots stood chained in rows against the walls! Will it not occur to an able and humane man, like Dr. Corsellis, that for the small percentage in which he may think restraint more convenient, some little inconvenience should be submitted to, in order to close the door against a system which is so open to the cruellest abuse? Will he not also see, that the extremely small percentage which he himself thinks it preferable to restrain, entirely sets aside the theoretic arguments of persons who have not tried the system, and who picture perpetual outrage by ruffian attendants, patients destroying each other, and a reign of terror?

3. Dr. Corsellis seems half conscious that he misunderstands my ambiguous expression about *exhaustion*. I meant, that patients not under restraint sooner exhausted their mental irritability, while patients under restraint were much longer in so doing, and also seriously exhausted their bodily powers.

4. My position, that the attendants should be good-tempered, powerful men, has been considered as recommending restraint through terror, and it has even been suggested, that a greater number of weak attendants would be less alarming. Practical men will not make such mistakes. A furious lunatic *cannot* be restrained by *terror*: it is an agent unknown to him. The powerful attendant does not ill-use him, nor does the lunatic expect it. The lunatic merely is conscious that he cannot execute his purposes; he does not often attempt to force the powerful attendant, he does not refrain through fear from trying to force his way through a stone wall; he is merely conscious that it is impracticable. If the walls be plaster, or the attendants weak, he may be tempted to struggle. Moreover, powerful men are more usually good-tempered, and more usually habituated to self-control, and less likely to give way to petty, waspish spite and peevish irritation.

5. I do not deny that surgical cases may require some restraint, but such is used even in common hospital practice, and cannot be considered as trenching on the great principle in issue.

6. As for lunatics asking to be restrained, I will say, that they should not be indulged

in their whim, but trained to self-control. The perverted tastes and instincts of lunatics are notorious; I would almost say, that their instinct was often towards what would injure them.

7. As for a patient eating his fæces, such a case would only require occasional attention; and I am convinced, from experience, that the great majority of cases of patients brought to our asylums insensible to the calls of nature, or sinking into that state, has arisen from the restraint system, and especially from confining the fingers.

8. The warmest advocate for restraint will find the detestable straight-waistcoat, muffs, collars, fetters, &c., can be dispensed with. Long before the abolition of restraint at Lincoln, the only instruments were a belt, fastened by two light chains to steel handcuffs, and leathern straps (hobbles) round the ankles, attached to each other, so as to prevent kicking, and not prevent walking.

9. Where a patient requires the seclusion mentioned by Dr. Corsellis, a solitary chamber may be used, but such I have found very rarely necessary.

10. Some have angrily attacked the system from a petty jealousy that any improvement should be made on their own system, and consider every improvement a rebuke to their own former practice. On the other hand, I feel most highly honoured in a gentleman like Dr. Corsellis having noticed my endeavours, and having so candidly and fairly stated his sentiments; in a year or two he will find the cases supposed to require restraint so reduced under his humane management, that he will consider the rare exceptions not to be worth retaining, and will emancipate himself entirely from a mischievous and insidious principle.

11. Accidents will sometimes happen in a lunatic asylum, and attendants will occasionally be irritated into striking a patient (an offence which should *never* be forgiven); but such accidents will be found much more numerous where restraints are most numerous, and patients will be found most irritating and more easy to be abused when maddened by restraint, or reduced by it to a revolting condition disgusting to the attendants. The cases of ill-usage in asylums are invariably most frequently, and indeed almost wholly, confined to the latter class of patients. Coercion applied under Dr. Corsellis's own eye may differ materially from coercion applied during his absence.

12. Where an accident occurs under non-restraint, or where an attendant strikes a patient, there is no fair argument for restraint, unless it is shown that ordinary vigilance would not have prevented the accident, that restraint would have prevented it, and that the person would have been restrained under such a system mildly

conducted, nor unless it be shown that restraint would have prevented the patient from being struck, and also that such occurrences were carefully sought out under the restraint system, and disproved on fair, impartial evidence.

I have not yet met with such a case as Dr. Corsellis describes, of a powerful patient continuing a struggle to rise from bed, between two attendants, until entirely exhausted. If I met with such a case a different course would be pursued. I have the honour to be, Sir, your obedient and faithful servant,

ROBERT GARDINER HILL,  
House-Surgeon.

Lunatic Asylum, Lincoln,  
March 28, 1840.

### INCONTINENCE OF URINE, DURING SLEEP, IN FEMALES.

*To the Editor of THE LANCET.*

SIR:—You will oblige me by inserting the accompanying case in your Journal. I have the honour to be, your obedient servant,

E. W. DUFFIN.  
14, Langham-place, March 26, 1840.

The "habit of wetting the bed," usually contracted during infancy, occasionally continues beyond that period of life, and is sometimes very difficult to overcome. For the most part, as the young person approaches puberty, the shame that attaches to the practice alone effects a cure; but this is not always the case, and it then becomes an object of professional interference. In females, when the habit is so riveted as to resist the correcting influence of moral reproach and feminine delicacy of feeling, it is not only very difficult to remedy, but in sensitive minds may give rise to a state of mental depression of the most alarming description. An example of this kind presented itself to my notice a few months ago, the urgency of which suggested the mode of treatment to be presently explained.

The patient, a young woman in humble but respectable life, was 19 years of age, in perfect and robust health, regular, unusually good-looking, well made, fully developed in every respect, and extremely sensitive, so that the misfortune could only be regarded as the result of habit, and not of local debility, or disease of the urinary organs. She had an advantageous offer of marriage pending, but was prevented accepting the proposal in consequence of being unable to retain the contents of the bladder while asleep. Her mother and sister slept with her in turn, but their surveillance was of no avail, as latterly it

appeared the girl did not void her urine while asleep at stated intervals, but as it was secreted, or as soon as a few ounces only were accumulated in the bladder. The habit had resisted every means, moral and medical, hitherto devised for its correction; and the young woman had for a length of time, in consequence, fallen into a state of despondency of the most distressing nature, and which had latterly, from the painful position in which she was placed with respect to her lover, increased to such a degree that her parents were apprehensive she might destroy herself. Being aware that the girl had been under medical treatment on various occasions, and that all the usual remedies had been fairly tried, it occurred to me, as the case was pressing, to establish a perpetual monitor at the orifice of the urethra. For this purpose I applied lunar caustic freely, to about an inch in extent, along the mucous lining of the urethral canal, so as to excite acute inflammation of the part. This had the desired effect. When the urine passed over the irritated surface the pain it produced was sufficient to awaken the patient, and arouse the sphincter vesicæ to the performance of its office. At first she slept but little, the scalding being very troublesome, from the urine almost constantly flowing; but in the course of a week the bladder admitted off a natural accumulation of urine, and the intervals between micturition were proportionably increased. A few weeks sufficed to completely correct the habit, though it was necessary to repeat the application of the caustic three times at intervals of fourteen or sixteen days, as the inflammation subsided. She has had no relapse during the last four months, and is to be married very shortly.

### SIR ANTHONY CARLISLE, AND HIS NIGHT-WORKING COLLEAGUES.

*To the Editor of THE LANCET.*

SIR:—Sir Anthony Carlisle appears in "The Times," of March 31, as the advocate of the London College of Surgeons. I dare say you have seen his production, but lest, in the multiplicity of your avocations, it may have escaped your attention, I am induced to mention it, in the hope that you will expose to the readers of THE LANCET the special pleading with which it abounds. One part of his letter I know to be untrue, and I am much at a loss to conceive upon what authority he has made the statement: I mean that part in which he says that "the Colleges of Edinburgh and Dublin are both open to English candidates upon less expensive terms." Of the Edinburgh College I know nothing, but I know that the Dublin College charges for its letters