ART. III.—*On Maxillary Dislocation and its Reductions.* By DILLON KELLY, M.R.C.S.I.; Medical Officer of the Milltown Dispensary, Co. Westmeath.

FROM the era of Hippocrates to the days of Fabricius ab Aquapendente, it was a generally received opinion that death on the tenth day would be the consequence of an unreduced dislocation of the lower maxilla—an opinion, by the way, which goes a great length in proving that not only the enunciator of that aphorism, and all echoing it, had never seen an unreduced case of such a dislocation. Here then we have an admission of the reverence and slavish veneration for the enunciation of a great man, keeping, as it were, the thought and induction of the surgeon in complete abeyance for a period of fully two thousand five hundred years, a lesson well calculated to call into active operation the faculties of every reflecting member of the profession, a lesson never to be forgotten by the routinist. Sir Astley Cooper was, I believe, the first English surgeon who showed the fallacy of that opinion. And in the first edition of Samuel Cooper's "first lines," published in 1801, we find the following statement:—

"It is evident from the circumstances in which a person with a dislocated jaw is placed, that very severe complaints and even death itself may follow the accident if no relief should be given." Which, to a certain extent, proves that he also was a believer in the Hippocratic aphorism. In the later editions of his dictionary, however, he partially advocates a different opinion. Yet, at the same time, in deference, apparently, to some unacknowledged authority, he again falls into the error of asserting that during the first five days the patient cannot speak, and, according to Boyer, cannot even swallow. The greater attention paid to those accidents by modern surgeons has completely demonstrated the fallacy of those most absurd opinions; for were they correct, we could never see a living example of an unreduced maxillary dislocation.

Since then, however, cases of unreduced maxillary dislocation have turned up, proving not only the fallacy of those opinions, but also that errors in surgical diagnosis and practice are not, like the Crusades, curiosities of the middle ages.

We need not, however, wonder at the assertion of Hippocrates, when we recollect that Sir Astley Cooper, in his surgical essays, in remarks on dislocations, mentions, on the authority of Mr. Cline,

that Mr. Samuel Sharpe, who was surgeon to Guy's Hospital, and had besides a large share of practice in the city, did not believe that such an accident as a dislocation of the thigh bone had ever happened.

The profession at the present day hold various opinions as to the causes preventing the reduction of a maxillary dislocation, Sir A. Cooper, Petit, &c., asserting that, when once the condyles of the inferior maxilla are thrown in front of the transverse roots of the zygomas muscular contraction, is the sole agent concerned in preventing their return to their normal positions.

Whilst Boyer and others believe the great obstacles to reduction to be the transverse roots of the zygomas themselves, which descend behind the condyles, one of these processes are hitched against their anterior inferior aspects, and kept so by the continued action of the elevating muscles.

M. Malgaigne, however, dissents, in toto, from the latter opinion, asserting, from experiments on the dead subject, that in depression of the lower-jaw the condyles invariably glide over the transverse roots of the zygomas, and, therefore, that what all surgeons of the present day regarded as a dislocation, was but the normal position of these processes, and that one can at any moment produce in their own persons all the symptoms of dislocation, pain, and the necessity for reduction, alone excepted.

That M. Malgaigne's theory is partly true is easily demonstrable by any surgeon, who, by simply opening his mouth and placing his finger over one of the condyles, will at once feel that process descending along the transverse root of the zygomas. In so far, therefore, he is correct; but to produce the simulation of a perfect luxation, it is also necessary that the maxilla should be protruded forward at the same time.

Therefore, although the normal position of the condyles during depression of the lower maxilla, is, to a certain extent, anterior to the transverse roots of the zygomas, this does not go to the whole length of constituting that abnormal position of the articulations which, occurring during the processes of sudden and violent depression and protrusion of the maxilla, is sufficient to produce its complete dislocation. M. Nélaton, seeing the inconsequence of the reasoning in this theory as determined by induction, and throwing increased muscular action overboard altogether, teaches that the chief obstacle to reduction of the maxilla must be sought for, not in the articulation itself, but parts in its vicinity. Starting from this

point, then, he asserts, from experiments also on the dead subject, that the cause preventing reduction, is not situate in the articulation, but dependent on the altered relations of the coronoid processes and the malar bones.

According to his theory, the apex of that process comes in contact with the malar bone, becomes hitched against its posterior inferior margin, and firmly locked in that position, not by muscular contraction, but by the abnormal length of the coronoid processes in certain subjects.

Now this is but a begging of the question, as it is evident from the above premises, that no such thing as a dislocation of the maxilla could occur, unless nature should be too bountiful to the unfortunate subject of such an accident in the article of jaw.

But there is nothing new under the sun, as M. Beaugrand clearly shows, who proves by extracts from Fabricius ab Aqua pendente, Bichât, Delpech, and Professor Smith, that they too held similar opinions concerning the position of the coronoid processes in this dislocation. But that both Malgaigne and Nélaton were in error in their deductions from experiments on the dead subject, must be evident, when we consider that in such cases there can be no such thing as muscular antagonism, a power playing the most important part in the theory of every dislocation, but more especially in that of the lower jaw, where the action of the elevators so preponderates over that of depressors.

If we study the physiology of the muscles of the lower maxillary articulations, we shall find that the external pterygoids, in consequence of the direction of their fibres being nearly at right angles with that of the temporals, masseters, and internal pterygoids, must, as a consequence, act at nearly right angles with the action of those latter muscles, they also being the principal muscles in carrying the lower jaw forward; that being assisted, to a certain extent, in that office by the superficial portions of the masseters and internal pterygoids, those being the proper grinding muscles, their actions must, as a thing of course, be associated with the motions of those muscles, and act simultaneously with them. Now, Mr. J. P. Vincent has shown very clearly that as almost all muscular actions are performed in reference to a centre, so when by any accident that centre is deranged, if an abnormal or a new centre can be readily formed, a new combination of muscular action is at once developed, as conformable as may be with the centre produced. When dislocation of the jaw takes place, a new centre is formed; and not only, therefore,

does the direction of the muscles involved in that dislocation become altered, but their lengths from their new positions become altered also. Thus the external pterygoids become considerably shortened, in consequence of the new positions of the condyles anterior to the transverse roots of the zygomas; whereas the internal must, to a certain extent, become elongated by the throwing backwards of the angles of the maxilla.

Now, admitting that the muscles adapt themselves to their new positions and centres, and that the external pterygoids must be considerably shorter in maxillary dislocations than in their normal states, it follows that a degree of spasm of these muscles must be present to account for their abnormal decurtation.

Assuming, therefore, that the internal pterygoids become elongated from the elevation and recession of the angles of the inferior maxilla, they, from an opposite cause, must be the subjects of spasmodic action also.

Here, then, we have two causes, both conducing to the same end, yet either of them, quite sufficient by itself, to produce all the phenomena of muscular spasm.

If, then, we admit that the centre of motion of any articulation being accidentally changed, the muscles of that articulation will, in consequence of the irritation assumed by all muscles, when they are forcibly thrown out of their line of action, take on or exert abnormal action of extraordinary power. We have, then, another cause sufficiently powerful not only to account for all the phenomena of maxillary dislocations, but also capable of opposing an almost insurmountable obstacle to their reduction. A moment's reflection on the appearances presented by such a dislocation must at once convince us that such an alteration has taken place. Continuing our examination, it will become evident that the external pterygoids, acting under the influence of the pathological law already enunciated, draw the condyles forward with almost irresistible force towards the pterygoid processes of the sphenoid, and hitch them against the transverse roots of the zygomas, which thus become their *points d'appui*; and produce a sort of dove-tailing between the depressions on their necks and the ridges constituting those roots. That the remaining elevators of the articulation are not in a state of quiescence, may be inferred when we take into consideration the direction those muscles assume in the new arrangement of the centre of motion, the internal pterygoids drawing the maxilla upwards and forwards, whilst the masseters and temporals draw it upwards and backwards.

Here, then, we have, in like manner, another combination of forces, almost diametrically opposed to each other, yet all tending to the same end, and requiring, I think, no great stretch of the imagination to presume that the increase of muscular action developed in consequence must be the chief obstacle to the reduction of such a dislocation.

To M. Nelaton, however, is the merit due of being the first to act on the inference derived from what he supposed the chief obstacle to reduction, and of practically applying means based on that inference, by directing the patient to open his mouth as wide as possible when about to reduce a maxillary dislocation; at the same time, that he completely overlooked the equally palpable inference to be drawn from his first step in the process of reduction, namely, the relaxation of all the muscles engaged in the dislocation by the action of opening the mouth.

Mr. Vincent, in his work on associated muscular action already referred to, observes:—

“That the overpowering strength which a muscle is brought to exert when its usual direction of action, about a centre, is forcibly changed, is another law of conditions of the utmost consequence to the surgeon.

“The dislocation of the patella on its edge is an example; the bone sets the extensors of the leg into action of the most violent kind, these muscles act most powerfully when the limb is to be straightened, and, in the condition in question, they act with a power that defies all the force that human aid can call to its service.

“Their force is also partly the effect of that irritation which all muscles get when they are thrown out of their ordinary line of action, particularly when they are disturbed in moving round their ordinary centre of motion. We have only to flex the leg a little, and all this powerful opposition to restoring the patella ceases on the slightest rotatory motion.

“The disturbed arrangement here, was the elevation of the centre of action of the extensors above the ordinary position, and as these muscles, in the straight position of the whole limb, are called upon to support a great proportion of the weight of the body, so when in that position, they are naturally impelled to exert vast force.

“But, in obedience to the associated action of combined muscles, when the leg is bent, and another order of motions in this complicated joint, brought into play—then, these extensor muscles immediately relax, as they would otherwise, by their action, prevent

the rotatory motion of the leg upon its axes; thus, the moment the leg was bent, the extensors returned into a comparative state of repose and left the patella quietly to resume its appointed position."

Acting on that principle, in May, 1839, I reduced, with the greatest ease, a maxillary dislocation produced by the retching of gestation in a stout young woman, the wife of a respectable trader in this town, to whom the same accident occurred repeatedly afterwards.

In March, 1847, Mary Thompson, aged fifty-five, a beggar-woman, of stout make, dislocated her lower jaw by falling against the end of her bed at night.

Her neighbours, in the morning, seeing she could not shut her mouth, unanimously were of opinion that she was "fairy-struck." Firmly believing in the truth of this superstition, she sought no surgical aid, and remained in a state of suffering for four days; yet at the same time making every effort to procure funds to bring her to a fairy practitioner at some distance.

Whilst thus engaged, she accidentally called on Mrs. F. for some relief, who at once recognized the nature of the accident, and sent her to me.

In this case also, notwithstanding the length of time that intervened, and the muscularity of the patient, I reduced the dislocation without the slightest difficulty.

Lastly, in August, 1850, J. M'Donnell, aged about thirty, tall and rather muscular, having gone to the funeral of a friend, and drank too freely, the violent retching that succeeded dislocated his lower jaw. Being up to that period a teetotaller, and not knowing what had occurred, or the nature of the accident, he and his family imagined he had suffered an infliction for breaking his pledge, from which he was destined never to recover; and I found him, in consequence, although still labouring under the effect of intoxication, in a state of the greatest distraction.

In this case too I was equally and instantaneously successful.

In accordance with the theory, therefore, of associated muscular action it is necessary, for the reduction of this dislocation, that the pterygoids, masseters, and temporals should be relaxed, as being the chief or opposing forces to its reduction. And to relax them, it is necessary that the digastricus, mylo-hyoid, stylo-hyoid, and genio-hyoid, or group forming the depressors of the lower jaw, should be called into action by opening the mouth.

To reduce it, therefore, place the balls of the thumbs, covered

with a handkerchief, on the crowns of the posterior molars, grasping the angles of the jaw externally with the fingers; then desire the patient to open the mouth, when the slightest pressure downwards, during the act of opening it, will be sufficient to disengage the necks of the condyles from the transverse roots of the zygomas, and will permit the temporals and masseters to at once reduce the dislocation by the reinduction of their normal action.

In conclusion, so easily is such a dislocation reduced in some subjects by that mode of treatment, that I instructed Mrs. F. in the manipulation, who was quite familiar with the accident, and who also became so familiar with the principle, that she was accustomed to reduce her own dislocations by pressure with her indices placed on the crowns of the posterior molars.

ART. IV.—*Remarks on Cholera.* By W. JACKSON CUMMINS, M.D., L.K. and Q.C.P.I., Physician to the Cork Dispensary and Blackrock Cholera District, &c., &c.

CATTLE plague and cholera threatened Ireland for a long time before they actually made their appearance; the one, a disease of admittedly contagious nature, the other with a doubtful character for contagion, but known to extend its ravages along the great paths of human intercourse.

We had time to prepare for both, and by adopting means applicable to each, the disasters which threatened have been in a great measure prevented.

A true "stamping out" process was adopted for the rinderpest; assuming that the disease only spreads by contagion, each case that occurred in the island was rigidly isolated, and all foci in which reproduction of its poison was possible, were utterly destroyed; success followed upon these measures, and, whether truly or not, we assume with more reason than ever that rinderpest is simply contagious, and that we have stamped it out.

But even if cholera were not unmistakably an epidemic disease, which, although portable by human beings, and possibly contagious, can wend its way from country to country without assistance from man, the necessities of civilization and commerce would render it impossible in these days of locomotion to apply the stamping out process for its prevention; and therefore, when cholera threatened, we adopted what might be called a starving out system, by depriving