it in the form of pill in two- or three-grain doses every two, three, or four hours. I have seen very severe cases yield to this treatment. Some of you may recollect one of our house-surgeons who had a bad attack of hæmoptysis, and for whom I prescribed this substance, and who made a satisfactory recovery.

In the opinion of some physicians, acetate of lead is a more powerful styptic than gallic acid, but in the treatment of the form of hæmorrhage which we are now considering I prefer the latter; if, however, in any case this failed, I should resort to the lead preparation. If you give it, it must be in the full doses which I have recommended.

Sulphuric acid is a good remedy in slight cases of hæmoptysis; and it may be combined with other substances, as quinine, iron, etc., which are given for the general treatment of the disease; and, indeed, I have seen cases which have been somewhat severe yield to full doses of this acid. There was a man in the wards some years ago who was spitting a good deal of blood, and for whom the house-surgeon had ordered sulphuric acid in ten-minim doses. I saw the patient for the first time after he had been taking the acid for two or three days, but it had not checked the hæmorrhage in the slightest degree. I considered the dose too small, and I increased it to thirty minims. In twenty-four hours the hæmorrhage had greatly diminished, and it soon stopped. If you are disposed to try this acid in any severe case, you must give it in full doses; but it is not so easily taken, nor is it so well borne by patients as gallic acid. Moreover, as it must be largely diluted to be taken, it necessitates the swallowing of a good deal of liquid, which is generally to be avoided.

Let me give you a caution in reference to the administration of opium. It is well to bear in mind its tendency to confine the bowels; for, in treating persons who are very weak for hæmoptysis, you may find that when you have checked the hæmorrhage you have great trouble in getting the bowels opened, and the efforts to move them may reproduce the bleeding. Of course, in any severe case you must do all you can to stop the hæmorrhage, and opium, either with gallic acid or acetate of lead, is often, I think, useful. It doubtless possesses some styptic powers, and, moreover, is probably of use in sustaining the patient under the influence of the loss of blood. I advise you, however, not to continue its use longer than is absolutely necessary.

My experience of the use of ergot of rye in pulmonary hæmorrhage is not very favourable. I have given the tincture in several cases, but I have not been very satisfied with the results. It may be applicable to some cases, but I do not think that it possesses such valuable properties as gallic acid or acetate of lead.

In severe cases of hæmoptysis, I always apply ice to the chest. We know that a cold substance applied to the skin will produce a reflex contraction of distant blood-vessels; and it has appeared to me that ice applied to the chest has been of service in checking hæmoptysis. I have never seen any injurious results follow its use. The ice should be applied in a bag, and should not be kept on sufficiently long to produce a chill.

You will find digitalis recommended by some writers as a valuable agent for checking hæmoptysis. I have frequently found, in cases to which I have been called in consultation, that this medicine has been given, and I know that many practitioners have great confidence in it. They do not, however, prescribe it alone, but in combination with other remedies, as sulphuric acid and laudanum, so that it is difficult to say how far the results which have followed have been due to the digitalis itself. As far as my own experience goes—and I have frequently prescribed digitalis—I cannot recommend it as a trustworthy remedy in hæmoptysis. You are probably aware that there are conflicting views in reference to the action of digitalis. On the one hand, it has been considered a cardiac sedative; on the other, a cardiac tonic. If, as is alleged by some, it have the power of causing contraction of the smaller arteries, it ought to be, theoretically, useful in hæmoptysis; but on this point I can only give you the result of own clinical observations, and, having tried it and found it fail, I have given up its use.

I occasionally prescribe dry cupping in hæmoptysis, especially if it be of an active character; but I never fail to give styptics internally at the same time.

With regard to the administration of purgatives, I must caution you against their indiscriminate use in this affection. When you have to deal with tolerably robust individuals you may safely give purgatives, and they will often be of service; but when the hæmorrhage is severe, or the patient in a very exhausted condition, you must be very careful how you further lower him by their administration. It becomes sometimes a very serious question whether the movements necessary for the action of the bowels may not prove injurious by opening a vessel which has recently closed. In some cases the thread on which life appears to hang seems so slight that we dare not allow the slightest movement on the part of the patient, and we are glad that the bowels remain inactive.

Whenever your patients show symptoms of exhaustion during the occurrence of hæmoptysis, you need not hesitate to give small doses of stimulants with food at regular intervals. I do not believe that such treatment in anywise tends to increase the hæmorrhage, and it has a beneficial effect in sustaining the patient.

There is one remedy to which I have not referred; viz., turpentine. It is most valuable in hæmorrhage from the bowels, but less so, in my opinion, in pulmonary hæmorrhage. However, it is an agent to which you may have recourse should other measures fail.

A few words as to the general management of your patient. Let him be kept perfectly quiet, and do not allow any person to be with him except his nurse. Take care that his room is kept cool and well ventilated, and give no other food than milk and beef-tea, in small quantities and iced. Thirst will often be complained of: this is best relieved by small lumps of ice. You must not allow large draughts of iced-water, and everything likely to cause vomiting or distension of the stomach must be specially avoided. Lastly, let me advise you not to disturb your patient for the purpose of making unnecessary physical examinations.

RECOLLECTIONS OF WORK IN AN AMBULANCE.

By WILLIAM MAC CORMAC, F.R.C.S.

IX.—Conclusion.

PERHAPS I cannot do better in concluding what is but a sketch, and, I fear, a somewhat imperfect one, of our ambulance work, than by giving *in extenso* a table of all the cases of injury which we received and treated in Asfeld, and of all the operations that were performed. Some of these operations were, however, not performed at Asfeld, the patients having been sent to us subsequently from other ambulances. The classification of the injuries is made mainly according to regions from the head down to the foot, which is, perhaps, the simplest and the best plan. When the injuries have been multiple, they are classed under that one which is likely to prove most dangerous to life. Besides the cases thus recorded, there are a number whose names were never discovered, and all source of identification was lost. There are several, too, whose names are known, but not the forms of injury from which they suffered. All this was unavoidable. The amount of work imposed upon us was simply overwhelming for the first few days.

I have prepared these tables with a good deal of care and after a great deal of trouble. I had my own notes, and, in addition, a general register of all the cases. By collating these two carefully I think I have been able to exclude serious error, and to present as correct a *resumé* of our work in a tabular form as it is possible to have.

Table of Injuries Treated at Asfeld during Sept. and Oct. 1870.

	Cases.	Dths.
Scalp-wounds	9	2
Fracture of the Skull	8	7
Gunshot Wounds traversing the Face or the Face and Neck, and in general Fracturing the Bones	24	5
Wounds of the Face destroying an Eye	4	0
Wounds traversing the Neck	5	0
(In one case the trachea was divided).		
Wounds of the Soft Parts around the Shoulder-joint without Penetration of the Articulation	7	0
Wounds around the Elbow-joint without Penetration	1	0
Wounds of the Soft Parts of the Hip and the Buttock	18	6
Wound of the Buttock and other parts	7	0
Complete Avulsion of the Buttock, with Fracture of the Ilium and Sacrum	2	1
Wounds around the Knee-joint not penetrating the Articulation	21	2
(In one case the Popliteal Artery was divided by the ball, causing Sphacelus.)		
Wounds around the Ankle-joint without Penetration	3	0
Penetrating Wounds of the Shoulder-joint	6	3
" " Elbow-joint	15	6
" " Hip-joint	3	2
" " Knee-joint	10	9
" " Ankle-joint	7	3
Shell-wound Penetrating both the Shoulder and the Elbow-joint of the same Arm	1	0

Table of Injuries.—Continued.

	Cases.	Dths.		
Wounds of the Soft Parts of the Chest without Penetration; sometimes complicated with Fracture of the Ribs	14	2		
Superficial Wounds of the Chest and Abdomen ...	4	0		
Superficial Wounds of the Chest and other parts ...	5	0—23	2	
Superficial Wounds of the Back and Loins ...	...	15	2	
Wounds of the Back and other parts ...	...	2	0	
Gunshot Wounds of the Spine—				
Cervical Region	2	2		
Dorsal Region	1	1		
Lumbar Region	4	3—	7	6
Gunshot-wounds of the Pelvis	...	4	0	
Gunshot-wound of the Pelvis with a Penetrating Wound of the Chest also	...	1	1	
Gunshot-wounds Penetrating the Chest—				
Wounds penetrating or traversing chiefly the				
Left Lung	18	9		
By a Ball first traversing the Scapula ...	3	2		
By a Ball first traversing the Head of the Humerus	4	1		
By a Ball first smashing the Clavicle ...	5	4		
Shell-wound tearing away the side of Chest and exposing the Lung largely ...	1	1—31	17	
Wounds Penetrating the Abdomen	...	7	7	
Wounds of the Soft Parts of the Arm without Fracture	31	1		
Wounds traversing both Arms	2	0—33	1	
Wounds of the Fore-arm without Fracture	...	22	0	
Gunshot Injuries of the Hand	...	33	0	
Wounds of the Soft Parts of the Thigh without Fracture	63	6		
Gunshot-wounds traversing both Thighs	3	0		
Gunshot-wounds of the Thigh and other parts ...	9	1—75	7	
Wounds of the Soft Parts of the Leg without Fracture	...	36	1	
Gunshot Injuries of the Foot	...	24	2	
Gunshot Fractures of the Femur—				
Upper Third	9	5		
Middle Third	8	4		
Lower Third	10	10—27	19	
Gunshot Fracture of the Leg—generally the Tibia.	41	13		
Gunshot Fracture of the Tibia, with Simple Fracture of the opposite Leg	1	0		
Gunshot-wound traversing both Legs, causing Fracture of one Tibia, a Wound Penetrating the opposite Ankle-joint, and a Wound of the Thigh without Fracture	1	1—43	14	
Fracture of the Femur and Tibia in the same Limb	...	1	1	
Simple Fracture of the Leg	...	4	0	
Gunshot Fracture of the Humerus	...	24	10	
" " " with Wound of the Thigh and Buttock	...	1	1	
Gunshot Fracture of the Radius or Ulna, or both	...	10	0	
Burns, Contusions, and Sprains	...	31	0	
Temporary Loss of Sight from Shell-explosion ...	...	1	0	

I have purposely avoided any record of the numerous cases of Fever, Dysentery, and Rheumatism, which we had, as they only remained for a very short time under our treatment.

Table of the Operations Performed.

	Prim.	Cases.			Deaths.		
		Sec.	Tot.	Prim.	Sec.	Tot.	
Disarticulation at the Hip-joint	0	3	3	0	3	3	
" " Knee-joint ...	0	3	3	0	3	3	
" " Shoulder-joint ...	1	1	2	1	1	2	
" " Elbow-joint ...	0	2	2	0	2	2	
" " Wrist-joint ...	2	0	2	0	0	0	
Amputation of the Thigh.							
Upper Third.....	2	6	8	1	5	6	
Middle Third	1	9	10	1	8	9	
Lower Third	2	1	3	2	1	3	
Amputation of the Leg.							
Upper Third.....	14	6	20	5	3	8	
Middle Third	2	1	3	0	1	1	
Lower Third	2	0	2	1	0	1	
Syme's Amputation	0	2	2	0	1	1	
Amputation of the Arm	14	6	20	6	3	9	
" " Fore-arm	4	0	0	0	0	0	
" " Arm & Fore-arm ...	1	0	1	1	0	1	

Table of Operations.—Continued.

<i>Table of Operations.—Continued.</i>				Cases.			Deaths.		
	Prim.	Sec.	Tot.	Prim.	Sec.	Tot.	Prim.	Sec.	Tot.
Disarticulation at the Shoulder-joint and Amputation of the Fore-arm	1	0	1	.....	1	0	0	0	1
Double Fore-arm Amputation	1	0	1	.....	0	0	0	0	0
Double Leg Amputation	1	0	1	.....	1	0	1	0	1
Excision of the Knee-joint	0	1	1	.....	0	1	1	0	1
" Shoulder-joint	1	3	4	.....	1	1	2	0	2
" Elbow-joint	4	7	11	.....	1	5	6	0	6
(One case requiring secondary amputation recovered.)									
Double Resection of the Shoulder and Elbow in the same Arm	0	1	1	.....	0	0	0	0	0
Resection of one-third and one-half of the Clavicle	1	1	2	.....	1	1	2	0	2
Resection of considerable portions of Long Bones	0	0	10	.....	0	0	0	0	0
Extraction of Splinters of Shells and of Bullets	About 150								
Partial Amputation of the Hand	0	0	12	.....	0	0	0	0	0
" " Foot	0	7	7	.....	0	0	0	0	0
Resection of the Lower Maxilla	1	0	1	.....	0	0	0	0	0
Resection of the greater portion of the Ulna	2	0	2	.....	0	0	0	0	0
							Cases.	Dths.	
Ligature of the Subclavian Artery	...	...	...	...	2	2	2	(One was almost immediately fatal, the other died pyæmic.)	
Ligature of the Common Carotid	...	...	...	...	2	1	2		
(Since this report was made out, the other case has proved fatal at Brussels after apparently complete convalescence.)									
Ligature of the Femoral (died pyæmic)	...	...	...	...	1	1	1		
Ligature of the Dorsalis Pedis	...	...	...	...	1	0	1		

In making out these tables, I found the left side of the body very much more frequently injured than the right—certainly in a proportion of not less than three to two. The left lung, for instance, was traversed nearly twice as often as the right. The left hand, fore-arm, and arm, much more frequently suffered than the right, and the same was true of wounds of the lower extremity. The ordinary positions assumed by a soldier in firing are such as to expose the left side most.

I have been repeatedly asked whether I observed any difference in the manner in which French and Germans bore suffering and pain, and recovered after injury. I can only record my own impressions, derived from what I saw, when I state that I failed to observe any marked difference. Differences there may have been, but what struck me most was the resignation, both amongst officers and men, to their too often sad fate. I met with no repining, no fretfulness. The recollection which I bear away with me, and which always presents itself in the foremost place, is the gratitude that these poor fellows showed and expressed for all we did for them. Flesh and blood have the attributes of flesh and blood no matter on which side of the Rhine they may have been nurtured. And, apart from individual characteristics, I could detect no difference between the way in which a German and a French wounded soldier—each of whom had sustained an injury of like severity—comported himself.

On a reference to the table of injuries, it will be seen that there are recorded seven cases of penetrating wound of the ankle, with three deaths. Two of these deaths followed secondary amputation; the third was from exhaustion.

CASE LI.—Holler, aged 24, a private in the 53rd Regiment of the Line, was wounded on the 1st September by a ball which entered an inch and a half below, and slightly posterior to, the internal malleolus, and emerged a little in front of the external malleolus. For a time, under expectant treatment, all went well; a number of small pieces of bone had been removed, and fair prospects of good recovery were entertained; but on September 17th Syme's amputation proved needful, and was performed by Dr. Wyman. The poor fellow died with pyæmic symptoms on September 21st.

CASE LII was also one of penetrating wound of the ankle, but recovery took place after expectant treatment. Sergeant Emile Baudry was wounded on September 1st, by a ball which opened the joint just over the instep. The ball was extracted by the wound of entrance. There was a good deal of diffuse inflammation, and matters at one time did not look well, for I have marked in my note-book "Case for operation", and even decided on the 26th to excise the joint. I did not do so, however, and recovery eventually took place. We discharged him convalescent on October 8th.

But for the impossibility of getting anything fixed in the Asfeld ceilings capable of supporting swinging apparatus, we should more

generally have used suspension-splints; and I know of nothing better for wounds of the ankle, or for cases in which operations have been performed in that region, than the apparatus of Professor Esmarch, as represented in Fig. 4.

CASE LIII.—Eugene Gaillot, Sergeant-Major of the 21st Regiment of the Line, was struck by a ball just posterior to, and a little above, the tip of the internal malleolus. There was no wound of exit, nor could the ball be discovered. For some days nothing unusual was witnessed, but then the ankle began to swell and inflame; free counter openings

Fig. 4.—Professor Esmarch's Apparatus for Wounds or Excisions of the Ankle-joint.

were made on the opposite side, from one of which the ball, lying almost quite superficially, was readily removed. It was evident that the ankle-joint was now seriously involved. Every care was bestowed on this poor fellow, who was a fine handsome young man of two-and-twenty, but without avail. Fresh abscesses formed up the leg, accompanied with very profuse suppuration; and it became necessary, in order to afford him a chance of life, to amputate the limb. I disarticulated accordingly at the knee-joint, not removing the cartilage of incrustation. The popliteal artery was twisted. For some days the relief experienced was remarkable: he looked a new man, and we expected him to recover. Then he had the fatal rigor; a sweat; his appetite failed; diarrhoea and vomiting followed; and within a fortnight he died quite pyæmic. On account of an attack of secondary hæmorrhage the day but one before his decease, I ligatured the femoral artery. This bleeding would, I consider, have taken place just the same had the ligature been applied to arrest the bleeding in place of twisting the vessels. The bullet, which must have been well-nigh spent, since it did not penetrate the skin on the opposite side of the limb, grooved deeply the lower end of the tibia, just above the articulating extremity, and caused, in addition, a spiral fracture, reaching as high in front as the junction of the middle and lower thirds of the bone. The existence of this fracture, but not its extent, had been previously ascertained.

With reference to fractures of the leg I have not much to say. We had the large number of forty-three cases with fourteen deaths. The majority of these cases, in consequence of the extensive injury to the bone, were submitted to amputation, but a considerable number were treated in ordinary splints, and with excellent results. After an interval of three or four weeks the limbs were put up in fenestrated gypsum bandages, and then the patients could be with perfect safety and great facility removed.

The amputations of the leg were among our most successful cases: six only perishing out of eighteen primary amputations. Of the seven cases of secondary amputation, four died: making a total mortality of ten cases in twenty-five operations. The fatal case of amputation in the middle third was one where Teale's operation had been performed and the flaps became gangrenous. It was the only instance in which recourse was had to this operation. The others were made by long anterior and short posterior cutaneous flaps, and a circular division of the muscular substance.

As might be anticipated, the penetrating abdominal wounds were all fatal. Those in the spine were also very fatal; one man only, who had been wounded low in the lumbar spine, recovering so far as to be able to leave hospital. Of the four wounds of the pelvis, all recovered, as the abdominal cavity was not implicated.

With reference to gun-shot fractures of the femur, it may be observed that all those in the lower third perished. In the middle third, two survived after amputation in the upper third, and two after treatment for the fracture. In the upper third, conservative treatment was most generally adopted, and with a happy result in the four cases already detailed. Five deaths took place—two after disarticulation at the hip-joint, and three from pyæmia and exhaustion.

Perhaps it may not be uninteresting to some readers to figure the bullets by which these shocking mutilations are caused. The first woodcut represents the French, Prussian, and Bavarian bullets, as well as that of the mitrailleuse. The first two weigh respectively 380 and 500 grains; the Bavarian bullet weighs 434 grains; while the mitrailleuse ball is an ounce and three-quarters in weight.

Fig. 5.—Chassepot, Needle-Gun, Bavarian, and Mitrailleuse Bullets, of the natural form and size.

The curious alterations in form which these projectiles assume after contact with the bones may be estimated by a glance at the accompanying woodcuts.

Fig. 6.—A Bavarian Ball completely flattened out against the Femur, against which it lay in close contact. The bone was extensively fractured.

Fig. 7.—A Bavarian Ball which struck the Femur, carrying away a portion of the Bone firmly impacted in it.

Fig. 8.—A Chassepot Bullet which entered the left cheek, and, after ripping up the hard palate, was cut out from behind the right Sternomastoid Muscle.

Fig. 9.—A Needle-gun Bullet, flattened by glancing off the Ilium, which was not fractured. The ball was cut out of the Buttock.

Fig. 10.—A Needle-gun Ball, which traversed the chest from before backwards. Cut out behind with portion of rib impacted in it.

There is now but little more to say. After handing over the dozen remaining patients to the care of our Dutch friends, whose ambulance was then being installed, I started with those of our party who remained with me to the end, for Brussels, *en route* for England, taking with us Colonel Beaudoin, to place him in an ambulance in that city. The colonel bore the journey well, and without fatigue. I parted with him a day or two afterwards with great regret, but in the expectation of seeing him soon again. I was inexpressibly shocked to hear, not much more than a month later, of his unexpected death. He was a brave soldier and a simple-hearted gentleman. He died, as I believe, of a broken heart. Thus terminated our labours at the Caserne of Asfeld.

Our ambulance was now completely separated. Part of the staff had previously started in search of further work, under the command of Dr. Pratt; and their well known and brilliant services at Orleans re

quire no meed of praise at my hands. They were such as to render their old associates both proud and, it may be, a little envious. At Epernay, at Metz, and still later in Switzerland, amongst the famished and perishing troops of the brave but beaten Bourbaki, Dr. Frank, Dr. Webb, Mr. Blewitt, and Mr. Wyman rendered services which, if not so brilliant or so exciting as those rendered at Orleans, are certainly not less praiseworthy or valuable.

The war is now over; peace has been signed; and I may say without affectation that, through many difficulties and dangers, the Anglo-American Ambulance has successfully pursued its humane mission. I believe it has accomplished much genuine good; that it has brought aid and succour in an hour of great distress, when such aid would otherwise have been wholly wanting; and I for one can look back, as I believe so also can every other member of the ambulance, with unalloyed pleasure, and, it may be, a little pardonable pride, to the career of the Anglo-American Ambulance.

PROFESSOR FLOWER'S HUNTERIAN LECTURES ON THE TEETH AND ALLIED ORGANS IN THE MAMMALIA.

Delivered at the Royal College of Surgeons of England.

LECTURE III.—Wednesday, February 22nd.

THE formation of the permanent teeth commences at a very early period, almost at the same time with that of the milk-tooth. The process has been chiefly observed in Man. A small bottle-shaped mass of cells is cut off from the enamel-organ of the milk-tooth, and gradually becomes lower and lower in position until it is placed below the sac of the milk-tooth, to the upper part of which it is connected by a pedicle or neck conveying blood-vessels. It was formerly believed that the permanent tooth was formed in a depression at the side of the dental groove; but this appearance of depression was produced by the removal of the epithelium in the process of preparation.

The process of formation of the permanent tooth is the same as that of the milk-tooth. The former is, when fully calcified, separated from the latter by a thin bony septum. When the second dentition is about to take place, the root of the milk-tooth assumes a worm-eaten appearance, the depressions being filled by a highly vascular material derived from the alveolar periosteum. Absorption is effected by means of a large number of cells developed on the surface of the root; and this goes on till the whole root is removed. At the same time, the bony septum between the temporary and permanent teeth is absorbed, and the milk-tooth drops out. In some instances, the milk-teeth remain with their roots scarcely diminished, while the permanent teeth are taking their place.

The permanent teeth are connected with the milk-teeth only, as described, through the enamel-organ: in all other respects, they are quite independent. A milk-tooth may be entirely wanting; and yet the permanent tooth which should replace it will appear at the proper time.

With regard to the precise relations of the temporary to the permanent tooth, opinions are not as yet settled. Owen holds that the permanent true molars are a continuation backwards of the milk-series. Mr. Flower, however, dissents from this. In animals which have the milk-teeth functionally developed, these are an epitome of the permanent set; the last milk-tooth being a copy of the last permanent tooth; and, in placing the two sets side by side, we see a break in the temporary molar series. Again, where the milk-teeth are only rudimentary, it is difficult to believe the last molars to belong to that series. The Marsupials have only one small temporary tooth on each side of the jaw; in a young Thylacine, this has been found about to be shed when all the other (permanent) teeth were developed. It is difficult, then, to avoid the conclusion that the last true molars belong to the permanent set.

While there are several instances in which the milk-teeth are merely rudimentary, the permanent teeth being well developed, there is not one known example of the converse. The milk-teeth are—if the expression may be used—superadded to the permanent set, and belong to a high grade of development.

Nearly all Mammalia have teeth. In Monotremata, they are not calcified; and even in Edentata they are not entirely wanting. Cetacea can scarcely be said to have no teeth, inasmuch as even the Whale-bone-Whales possess rudimentary teeth at some period.

The number of teeth varies much among the Homodonts. The Great Anteater has 98; and there is a species of Dolphin which has 220—the largest number that is known. In Diphyodonts or Heterodonts, the typical number is 44; and this is rarely exceeded. There is

a fox-like animal which has 48; and there are a few instances of excess among Marsupials, some having 54. Some Cetacea (Homodonts) have the smallest known number; the number in the Narwhal being apparently reduced to two in the lower jaw, there being none in the upper. Among the Heterodonts, the Elephant has only two incisors in the upper jaw, and never more than 28 teeth in all; the common Rat has 20 teeth; and in an Australian Rat there are only 12, there being one incisor and two molars on each side of the jaw.

It is not possible to arrange the teeth of Homodonts in series and give them names. In a genus of Edentata (*Dasyus*), a special tooth is implanted in the præmaxillary bone, and may be called an incisor; and the Two-toed Sloth has on each side a greatly developed tooth, which, however, it is difficult to identify with the canine tooth of Heterodonts.

The names given to the groups into which the teeth of Heterodonts are divided must be regarded as arbitrary. The term incisors is applied to the front teeth, whatever may be their shape and function, which are, in the upper jaw, implanted in the præmaxilla. It must be remembered, however, that this connexion with the bone is only a secondary matter, the teeth originally belonging to the gums. Some teeth, indeed, are implanted in the suture between the præmaxilla and maxilla. In nearly all placental Mammals, there are not more than three incisors above and three below on each side; and the number is frequently even less. Excess over the typical number is very rare till we come to Marsupialia, where they may be four or five on each side.

It has been supposed that, when the number of incisor teeth is reduced, the missing tooth is that on the outer side. The Pig has three incisors, the Babyroussa two, on each side; and there is no doubt that it is the outer tooth which is wanting in the latter. In the Camel and Llama, however, there is a single permanent incisor placed far back, which must correspond to the third. In Bears, there are ordinarily three incisors on each side; but there is a genus in which the first in the upper jaw has disappeared. In the Sea-otter, also, the first incisor is wanting. The rule which has been referred to is, then, not absolute.

No satisfactory definition of a canine tooth can be given, except that it is that which lies behind the intermaxillary suture, and that the lower tooth passes behind the upper one.

The remaining teeth—molars—are divided into false and true, according to Owen. The false molars, or præmolars, replace the milk-molars; the true molars have no predecessors. This definition must, however, be modified, as some of the præmolars do not actually replace temporary teeth. The typical number of molar teeth is 7; viz.: in placental Mammals, præmolars 4, true molars 3; in Marsupials, præmolars 3, true molars 4. When the number falls short of this, the deficiency seems to be in the front præmolars and the posterior molars. But there are, no doubt, many exceptions, as has been pointed out by Owen himself. The four præmolars are rarely all present in Bears; and the missing tooth is the second or third. In some Bats, also, one of the middle præmolars is very small, and entirely disappears in some animals of the group.

CLINICAL MEMORANDA.

MUCOUS DISEASE.

IN connection with Mr. Whitehead's valuable paper on the above subject, which appeared in the JOURNAL of the 11th and 18th February, there is a point in the etiology which may be of some interest, as tending further to elucidate the conditions under which we meet with that somewhat obscure form of disease. Out of four cases that have come under my own cognisance, where mucous casts or membranous shreds were expelled from the large intestines, either alone or mixed with the ordinary alvine evacuations, in three of these this was associated with that rather rare pathological condition, "floating" or movable kidney. On carefully exercising palpation in the right hypochondrium, in each there could be discovered a movable or floating tumour, receding from the impulse communicated by the fingers, the diagnosis of which was made only after repeated careful examination, and rendered as certain as it was possible to be in the absence of positive *post mortem* proof.

Such a coincidence occurring in three out of four cases leads one to the conclusion that, in a considerable proportion of the cases of the so-called mucous disease, the general disturbance of excito-secretory nerve-function, induced by the abnormal position of the renal organ, may be sufficient to destroy the proper balance between normal nerve-excitation and secreting function, whereby the latter takes on that peculiar form so well described in Mr. Whitehead's paper.