the anatomy of the wound was indicative of injury of these vessels.

Haemorrhages from—		No. of Ligations.	Deaths.
Facial artery (or branches)	7	Under local anaesthesia Under general ..	5 2 } 0
Nasal region	4	—	—
Lingual or inferior dental	21	Lingual External carotid Common carotid	6 9 4 } 1 2 3
Pharyngeal region	3	—	1*
Totals	34	—	26 } 7

* Suddenly.

The above figures are compiled from the records of the first 400 cases of gunshot wound of face and jaw treated in the department.

The total of cases of haemorrhage is 34 and not 35, since one patient had haemorrhage distinctly from both the nasal and the pharyngeal regions. One death occurred immediately following haemorrhage from the pharyngeal region before any assistance could be given. One case died from shock within a few hours after ligation of both lingual arteries. Of the five remaining cases which ended fatally, one died from recurrence of bleeding from the floor of the mouth and another from cerebral embolism. The three fatal cases from ligation of the common carotid had all previously had the external carotid ligated, but owing to a recurrence of haemorrhage the former artery was ligated as a last resort.

Mortality.

Of 436 recorded cases of injuries to the face and jaws treated in the department between July, 1915, and January, 1917, 19 patients died from the following causes:

Haemorrhage	7
Bronchopneumonia	5
Cerebral complications	4
Septicaemia	2
Collapse	1

It is hard to make an accurate analysis of the percentage of deaths among patients suffering from gunshot wound of the face and jaw, because wounds of other parts of the body may exist which are of more serious consequence than those of the jaw. Of the four cases which died from cerebral complications, three were suffering from fracture of the base of the skull and one from spinal injury in addition to the jaw wounds.

Most of the patients who succumbed to bronchopneumonia had contracted this complication previous to admission to the department.

CONCLUSIONS.

We feel that some of the advances have been:

1. A realization of the importance of immobilization or reduction of maxillary fractures at the first possible moment along the lines of normal occlusion of the teeth.
2. Early reduction of sepsis by small and timely operations with a local anaesthetic.
3. A better understanding of the dangers attending the use of general anaesthetics for operations on patients suffering from face and jaw injuries.
4. The control of severe complications, especially of secondary haemorrhage.
5. The modification and simplification of many types of oral splints.
6. Temporary and permanent oral restorations.
7. The use of local anaesthesia for extensive plastic operations about the face, mouth, and neck.

This summary of the work has not included an appreciable number of cases which have been treated from necessity in other hospitals, nor a large number of patients who have received attention for dental and oral complications.

DR. LUDWIG LAZARUS ZAMENHOF, the inventor of the international language known as Esperanto, who died recently, was a member of the medical profession. He was born in 1859 at Byalistok, Grodno, in Russia, and practised as an ophthalmic surgeon in Warsaw. Esperanto was presented to the world in 1887.

A NOTE ON ORAL SURGERY.

BY

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AND

CAPTAIN H. LAWSON WHALE, R.A.M.C.

THE advances in the surgery of the jaw and face have been gradual, but as the result of experience a few points have crystallized out with distinctness.

At the beginning of the war broken fragments of bone were removed too freely; many such if left would have thrown out callus. A tooth should never be removed if there is any chance of it subsequently forming a useful support for dentures or other appliances. Even in the line of fracture the extraction of a tooth may be left until later, since for the period immediately following injury it may provide an invaluable *point d'appui* for some appliance.

Maxilla.

If the tuberosity carrying a molar tooth be separated from the rest of the bone by fracture, but the muco-periosteum is continuous, it should never be removed. It may be kept in position by any convenient method, whether by splint or by silk stitches through its muco-periosteum; and it will always unite with the parent bone. In the case of transverse fracture through both maxillae (with or without fracture of the palate), producing a downward sag of the maxillae *en masse*, the whole may be lifted up by a vulcanite plate moulded to the roof of the mouth; from the sides of this plate brass rods fitted with hooks permit of a constant pull by means of bandages fixed over the head. Union is established in less than three weeks. These two statements as to fractures of the maxillae are emphasized as being invariably true.

Mandible.

The displacement of fragments in a complete fracture of a ramus is often obstinate, and suitable neither for wiring nor, if there be a gap, for subsequent bone grafting. Occlusion of teeth in this very frequent type of case is obtained by building up the depressed side with vulcanite or a metal gutter, on which are fixed teeth.

Injury of Facial Nerve.

Often the loss of soft parts has involved a great part of the facial nerve, and on the injured side the angle of the mouth maintains its original relation to the lower jaw—that is, it is depressed. The tissue of the cheek is cicatricial, and anastomosis of the nerve is impracticable. A good result is obtained by elevating the mouth angle by a plastic operation.

Closure of Wounds.

A wound, however fetid, anywhere in the neighbourhood of the jaw ramus, should be closed as soon as possible. For drainage by tube a median stab-wound is then made beneath the chin.

Formation of Flaps.

Where a large gap in the cheek has to be covered by sliding a flap from one or both edges of the wound, the large amount of undercutting necessitated tends to impair vitality, and in particular to raise the tension on the stitches. To avoid these drawbacks the first third of the undercutting may be of dermis only; the next third may include fat and subcutaneous tissue; and the last third—that is to say, the most proximal part of the flap—may also embrace deep fascia. On pulling the flap in the necessary direction its deep surface now becomes shaped like a staircase; the blood supply is cut off to a less extent, and the tension is more diffusely distributed.

GENERAL CONCLUSION.

Speaking generally of facial wounds, it is advisable to delay considerably before doing final and finishing operations, but not at all before the primary sewing up.

The most common serious sequelae of war injuries to the jaw have been recurrent and secondary haemorrhages, inhalation pneumonia and gangrene of the lung, and mediastinitis.

Down to January, 1917, we had among 1,010 cases twenty-seven deaths, seven of these from pneumonia,

There were three tracheotomies (including one emergency laryngotomy) and eleven haemorrhages necessitating ligation of the external, and three of the common carotid. These three latter are all living, and apparently not suffering any discomforts as a consequence of this operation.

NOTE ON FLAVINE, SODIUM DESOXYCHOLATE, AND QUININE AS A MOUTH-WASH.

BY

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In the estimation of the value of chemical substances at present employed as antiseptics in the mouth and throat there is a sharp division of opinion as to the advisability of employing antiseptics in the treatment of infections where the chemical is brought in contact with such a delicate structure as the mucous membrane. Any chemical which would act as a bactericidal agent, which at the same time would not destroy the life of cells and inhibit phagocytosis, and which could be applied to such a delicate surface as the mucous membrane without causing an irritant action, would satisfy a long-felt want in mouth and throat treatment.

I have in the course of the last ten months examined a series of substances comprising the principal antiseptics, washes, lozenges, pastilles, etc., in common use.

Neufeld has shown that bile salts have a solvent action on pneumococci, but not on other bacteria. Bile salts also dissolve completely leucocytes, spermatozoa, amoebae, spirochaetes, and trypanosomes.¹ Mair has brought evidence to show that scarlet fever is due to a pneumococcus-like organism which is also bile-soluble,² and has indicated that there is reason to believe that "trench nephritis" is due to a similar bile-soluble diplococcus. Mair found that the solvent action on pneumococci of sodium desoxycholate was ten times as powerful as sodium cholate or the commercial sodium taurocholate.³

These bile-soluble diplococci show also a special sensitivity to solutions of quinine, and there is evidence that a combination of desoxycholate and quinine has a much greater bactericidal effect on them than can be accounted for by a mere summation effect.

A solution with the following formula:

Quinine hydrochloride	...	...	5 grams.
Sodium desoxycholate	...	...	40 "
Glycerin	...	...	250 c.cm.
Water	...	...	to 1,000 "

has been in use in the form of a fine spray for the throat and nose in cases of scarlet fever for some months, with results so far satisfactory that they show that the treatment does no harm, and that septic throats clear up with it at least as rapidly as with any other form of treatment.

Messrs. Allen and Hanburys are now preparing tablets containing:

Sod. desoxycholate	...	...	gr. 1
Quin. ethyl. carb.	...	...	gr. 1
Ol. menth. pip.	...	...	m. 30
Glycerrhiz. ammon.	...	...	gr. 2

Also with flavine 1 in 1,000.

The quinine desoxycholate solution has a considerable bactericidal effect also on other cocci which are not bile-soluble, and in the strength used it appears to have no irritant effect on the mucous membrane.

The method employed to test the value of the preparations checking the development of bacteria were all carried out in the same month; only one test was made in twenty-four hours. The mouth was first rinsed thoroughly with distilled water, and after thirty minutes the saliva was expectorated from the mouth into a sterile test tube, and then a loopful inoculated into nutrient agar and plated. At the end of an hour another test was made in the same manner. These tests were used as controls. Immediately after the second control the substance to be tested was rinsed thoroughly over the mouth, and then tests made in the same manner every half-hour up to the fourth hour. Plates were incubated for twenty-four hours

and counts made. The most favourable results were obtained from a solution containing:

Desoxycholate	...	...	2 per cent.
Quinine	...	...	0.25 per cent.
Flavine 1 in 2,000.	...	...	

Judging from the chemical action of the desoxycholate and quinine tablet, it should be an excellent treatment for infected throats, as in the strength used in these tablets all the pneumococci strains are easily destroyed without causing any irritation on the mucous membrane. This pathogenic group alone is giving more trouble than any other strains to be found in the mouth and throat. Again, amoebae are very easily cleared out of the mouth with sodium desoxycholate and quinine in the strength used in these tablets, as I have found in cases of pyorrhoea caused by amoebae.

In the solutions containing desoxycholate and quinine and flavine the bacterial count, even after four hours, was in most cases considerably lower than the control before treatment, whereas with the more irritating antiseptic solutions the count rises rapidly after the initial fall until it reaches a figure in excess of the normal. I consider this secondary rise in the number of bacteria to be a useful indication of an irritant effect on the mucous membrane. The same difference is seen in comparing the effects of the 1 per cent. carbolic and the desoxycholate and quinine tablets. The latter do not show the same reduction in the number of bacteria as the corresponding solutions, possibly because the effect in the mouth is somewhat localized. At the same time the effect on the throat of the slowly dissolving tablet should be greater than that of a mouth-wash, as the swallowing of the saliva in which the tablet has dissolved keeps up a continuous action on the mucous membrane of the throat.

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ACRIFLAVINE PASTE AS A DRESSING FOR INFECTED WOUNDS.

BY

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Owing to the limited supply of acriflavine we have been using this reagent at Leicester in the form of a cream or paste, somewhat on the lines of the B.I.P. method recommended by Rutherford Morison, which has given good results in certain cases. Thorough and efficient surgical treatment of the wound is still a necessary preliminary, but the results so far obtained with acriflavine paste as an adjunct to such surgical treatment are sufficiently encouraging to justify a wider trial.

I speak of such injuries as lacerated wounds of soft tissues, compound fractures of limb bones, and of septic cavities in bones associated with osteomyelitis, which often resist repeated efforts at sterilization by scraping out, and the removal of foreign bodies and bony sequestra. It is these heavily infected, profusely suppurating wounds as we see them at the base hospitals that seem to be especially benefited by packing with acriflavine paste after preliminary surgical sterilization and drainage. Amputation wounds have also been treated by leaving a quantity of the antiseptic material between the lightly sutured flaps where the amputation has had to be carried through infected tissues.

Several different forms of cream or paste have been tried:

1. Acriflavine soap paste is made by neutralizing stearic acid with sodium carbonate in the proportion of 1 part of sodium carbonate to 1½ parts of stearic acid with the addition of 0.1 per cent. of acriflavine. The soapy compound so prepared is canary yellow in colour and firm in consistence.

2. Acriflavine gelatine is made by heating French gelatine in water with the addition of acriflavine 0.1 per cent. The consistence of the jelly is determined by the amount of water added.