

The Ear

Diathermy Tube Puncture in Tuberculous Cervical Glands

—AGDA HOFVENDAHL (Stockholm).—A sharp-pointed cannula is first introduced into the gland from in front, and through it is passed the electrode which is so constructed that the active part passes gradually into the insulated part. The cannula is then retracted and coagulation carried out for one minute with a current of 300 milliampères. The indifferent electrode is placed on the other side of the neck. After three months the swelling has become decidedly smaller but has not disappeared, and treatment is, therefore, repeated. Ultimately the gland is scarcely observable.

On Epithelial Cyndroma of the Nose and its Place among New Growths—O. BECK (Vienna).—This growth which makes room for itself by pressure rather than by invasion is considered by Beck to be not merely similar to but identical with the basal-celled epithelioma of Krompecher. Sections from a primary growth and subsequent recurrences show the transition from the typical cyndroma to the equally typical basal-celled epithelioma.

(*To be continued.*)

ABSTRACTS

THE EAR.

Acute Inflammation of the Middle Ear and the General Practitioner.

Dr PETER MACDONALD. (*The West Riding Panel Record*, No. 13, December 1925.)

The writer speaks out in this short article. He states it as his belief that "there are few cases in which timely and proper treatment will not secure a result in which permanent damage is slight or negligible" in cases of acute inflammation of the middle ear. The factors which make for timely treatment are (1) parents, (2) the general practitioner, (3) the specialist. The first still require education. Upon the second devolves a heavy responsibility, and in the author's experience few general practitioners are competent to shoulder it; they have not the experience.

MACLEOD YEARSLEY.

Herpes Zoster Oticus and Allied Conditions. THOMAS GUTHRIE.

(*Lancet*, 3rd April 1926, Vol. ii., p. 710.)

The writer describes three cases, two men aged 56 and 28 respectively, and a woman aged 33. The condition, due to an inflammation of the geniculate ganglion, is rare, occurring in but 1 in 20,000 cases of ear disease. Guthrie's first two cases are fairly

Abstracts

typical of the condition and the first of these might have been mistaken for acute middle ear inflammation with labyrinth complications, had it not been for the presence of Ramsay Hunt's syndrome. The third case was not true herpes zoster oticus, but herpes facialis with acoustic complications; the principal seat of the herpetic inflammation is in the Gasserian ganglion. In all three cases treatment consisted of sedatives for the pain, the usual applications for the herpetic eruption, massage, and electrical treatment for the paralysis when this persisted.

MACLEOD YEARSLEY.

1. *Rotation and Acceleration Experiments, mainly on Frogs.* JOHN TAIT and W. J. MCNALLY.
2. *Ablation Experiments on the Labyrinth of the Frog.* W. J. MCNALLY and JOHN TAIT. (*American Journal of Physiology*, Vol. lxxv., 25th December.)

These articles represent the report on some experiments carried out at the McGill University, Montreal, after reading an account of the work by Professor Maxwell in the University of California.

The first idea, apparently, was to determine the effects of "the gravitational field of force," "linear acceleration," and "centrifugal force" in the frog, for which purpose the animal was placed (1) on a table, the surface of which could be tilted at various angles, and (2) on a table that could be rotated.

The animal was examined in its normal condition, and also after decerebration, "an operation under an anæsthetic" which consisted in "transverse compression of the cranium and brain, at a level just between the eyes and tympana." It was found that "so far as concerns the equilibrium reactions, normal and compressed frogs behave very similarly." On the other hand, the writers state that "on being gradually brought to rest after rotation the intact frog always assumes its usual orientation relatively to the gravitational field; not so the cranium-compressed frog, which may remain in a leaning posture after rotation has ceased. Whether this difference is due to the want of vision in the cranium-compressed frog, we have not determined." Further, one of the conclusions in their summary is that "to change simple linear acceleration in the line of gravity, as on an elevator, there is little or no reaction on the part of a normally-posed animal."

While it is fairer to regard these experiments as really an interim statement, and to trust that they may be the prelude to interesting developments, one cannot avoid the impression that perhaps the conclusions are premature, and in the case of the operative experiment are based on a lesion that one can hardly describe as selective.

There would also appear to be some lack of differentiation between the effect of the static and kinetic stimuli adopted.

The Ear

The authors find themselves in some disagreement with Magnus and de Kleijn, whom one cannot help feeling they have imperfectly understood. It is to be hoped, however, that they will continue their experimental work.

The second Report is much more valuable, as it refers to detailed operative experiments on the frog, a clear account of which is given.

Ether anæsthesia was used in all the operations, the frog being placed under a bowl along with a sponge moistened in ether. Induction, it is stated, takes three or four minutes, while the effect lasts three or four hours. All operations were carried out under the dissecting microscope, and consisted of section of nerves, or cauterisation of the ampullæ of the semicircular canals, or section of the nerves and destruction of the macula of the otolith apparatus. The reactions of the normal frog to various tests are first described.

To "linear acceleration" just for an instant, the frog "is seen to sway in the direction opposite to that of the temporary acceleration," both on commencement and cessation of the movement. (This would seem to correspond with the "springing reflex" as described by Magnus and de Kleijn.)

On "rotation about a vertical axis"—for instance to the right—the frog turns its head to the left, and may start to walk round and round to the left, whilst on cessation of the movement, the frog turns its head to the right and may execute several turns to the right.

"Rotation about a horizontal axis" (by which apparently is meant the reactions of a frog seated on a plane which can be tilted) would seem to be really a description of the effects of static rather than kinetic stimuli, as suggested.

In these circumstances, if the end of the tilt table beneath the animal's head is lowered, the head is promptly raised and both arms are extended, and, if this movement is reversed, with the frog still in the same position, the head is promptly lowered. On the other hand, if one side of the tilt table is lowered, the head and the anterior part of the body is promptly held in the opposite direction, with extension of the arm on the lower side, and flexion of the arm on the upper side.

These reactions would appear to conform to the "righting" reflexes of Magnus and de Kleijn, but the authors of this report regard them as due to the agency of the semicircular canals, since they find that injury to this apparatus interferes with the execution of these adjustments of the body.

On the other hand, they are in one respect at least in agreement with the results of the experimental work in Utrecht; as they find that the canals are not concerned with the postures, since after total ablation of the six ampullæ of the semi-circular canals, the responses of the frog, to tilting in any direction, are unaffected.

Abstracts

As the result of the destruction of the ampulla of the single canals, their findings would appear to agree with the generally accepted effects as regards the horizontal canals. From the phenomena exhibited, after destruction of a single anterior vertical canal, they consider that they are able to establish a functional correlation between this and the fore-limb on the same side, while a lesion of a posterior vertical canal would similarly seem to indicate that this has a functional correlation with the posterior limb on the same side.

The results are also given of experimental destruction of the ampullæ of both vertical canals together, of both posterior vertical canals together, of the left anterior vertical and left horizontal canal together, and all three canals on one side. From these experiments the writers consider they are able to answer a question raised by Magnus, as to whether the otolith apparatus is, or is not, in some way excited by movement, a point on which, in 1924, Magnus considered he was unable to give an opinion—though he thought that this was probable—as he did not know of any method of “destroying the canals and leaving the otoliths intact.” The authors of this work consider there is no evidence for this supposition.

They conclude with an account of their results on operative experimental injury of the utricle and saccule. In this connection they frankly state that “during any operation on the ampulla, either of the horizontal or of the anterior vertical canal, it was found that if injury occurs in the region of the utriculus, a permanent forced position of the body results,” a statement which one welcomes as a frank report but which must necessarily of course tend to invalidate some of the results of their work on the semicircular canals, as given above.

The effect of unilateral and bilateral injury of the utricle is given, and would seem to agree more or less with the observations of Magnus and de Kleijn ; but they themselves could not be very sure of the effect produced, and as regards the lesion, “in the end we were at no time sure of the utricular lesions.” They were more fortunate, however, in connection with the saccules, and are able to state “that functional elimination of one or both saccular maculae is an easy operation, and suggest “that the most reliable method is to sever the saccular nerves,” after which they find that the frog is in no way affected as regards its movements or position. They are further able to make the very astonishing though definite statement—“as it is impossible to demonstrate any disturbance of posture or movement, after either a unilateral or bilateral section of the saccular nerve, it is plain that in the frog, the saccular macula has no connection with equilibrial function.”

The accounts, unfortunately, are a little difficult to follow and we would respectfully venture to suggest that, in the future reports of this

The Ear

work, which we sincerely hope will be undertaken and published, the results will be tabulated clearly as:—

- (a) The behaviour of the normal frog to a definite stimulus and in a definite position.
 - (b) The experimental operative lesion.
 - (c) The behaviour to the same stimulus of the frog operated on.
 - (d) The exact lesion as found histologically on subsequent post-mortem examination.
- ALEX. R. TWEEDIE.

On the Choice of Method in the Operative Exposure of the Jugular Bulb. ALBERT DENKER. (*Archiv. für Ohren-, Nasen-, und Kehlkopfkunde*, 114 Band, Heft 1/2, October 1925.)

At the Halle Clinic 24 out of 78 cases of sinus thrombosis were complicated by thrombosis of the jugular bulb. Latterly Denker has found Tandler's modification the most satisfactory of the various methods under discussion. The technique is briefly as follows:

- (1) Unite the incision for ligation of the jugular with the mastoid wound.
- (2) Raise the anterior border of the sternomastoid and tie a loop of catgut loosely round the accessory nerve in order to keep it in view during the subsequent steps. The nerve passes posterior to the vein in a proportion of cases.
- (3) Retract the parotid forward and insert the finger into the interval between the styloid and mastoid processes. Here the facial nerve is discovered as it emerges from the stylo-mastoid foramen.
- (4) Sever the tip of the mastoid and draw it backwards together with the sternomastoid muscle. Detach from its groove and reflect downwards the posterior belly of the digastric muscle.
- (5) Excise between ligatures a portion of the occipital artery and free the jugular vein from the common facial vein upwards.
- (6) Elevate the insertion of the rectus capitis lateralis from the inferior surface of the jugular process of the occipital bone. Proceeding cautiously with the chisel commencing at the rim of the jugular foramen, it is now possible to lay open the venous canal in its whole length.

WM. OLIVER LODGE.

Encephalitis following Operations on the Temporal Bone. J. ARNOLD-JONES. (*Lancet*, 1926, Vol. ii., p. 493.)

This is a very rare condition, as a search through literature fails to discover references.

Two cases are reported, the first in the *Lancet* 1906, under Macleod Yearsley, reported in detail by the present writer when

Abstracts

House Surgeon. The second was a private patient operated on by the writer in 1922.

In both cases, during a radical mastoid operation, the bony and meningeal roofs of the antrum were missing and brain substance was present in that cavity. Pyrexia of some weeks' duration followed in both cases, the first one being complicated by a temporo-sphenoidal abscess. The symptoms characterising simple uncomplicated encephalitis are pyrexia of some weeks' duration, accompanied by delirium more or less marked. The patient at no time appears very ill. The prognosis is good.

The degree of encephalitis which follows upon operations under these conditions depends upon two factors:—

(1) The amount of trauma inflicted on brain tissue. (2) The thoroughness with which the antro-tympanic cavity is cleared from infective material.

(AUTHOR'S ABSTRACT.)

Radiotherapy and Radiumtherapy associated or not associated with Electro-coagulation by Diathermy in Chronic Tonsillitis and Pharyngitis. E. GONZALEZ. (*Revista Espanola y Americana de Laringologia, Otologia y Rinologia*, July 1925, Vol. xvi., No. 4, p. 209.)

The adjacent lymphatic tissues play an important part in pharyngitis and tonsillitis, and the infected tonsils and adenoids are only a part of the process. The immunity produced in the tissues in the various forms of infection indicates that radiotherapy fulfils the therapeutic requirements much better than other forms of treatment directed solely to the tonsils and adenoids, without subjecting the patient to any of the discomforts or complications which follow other methods. The evidence obtained from a review of the literature indicates that small doses of radiotherapy produce the desired results.

The extirpation of tonsils and adenoids results in the invasion and infection of the lymphatics of the neighbouring tissues. Eighty per cent. of the cases suffering from periodical attacks of tonsillitis and pharyngitis under observation for one to three years have been relieved by radiotherapy. The same result has been obtained in periodical pharyngitis, in which the tonsils and adenoids have been removed. The cases of chronic tonsillitis and pharyngitis, with more or less hypertrophy, are cured by radiotherapy without the necessity of surgical intervention. The mild hypertrophies are cured by radiotherapy only.

In some cases with hypertrophied tonsils of fibrotic type the diminution in size can be continued until the tonsillar fossa becomes clean by the application of radium needles or of electro-coagulation (diathermy). One active pole can be used on the tonsil with the indifferent one under the buttocks, or two active poles can be used. The author up to the present has always employed the first. The technique is described in detail.

LIONEL COLLEDGE,

Nose and Naso-pharynx

NOSE AND NASO-PHARYNX

A Case of Gangrene of the Nose. Dr FR. PEEMÖLLER. (*Archiv. für Ohren-, Nasen-, und Kehlkopfheilkunde*, Bd. cxiv., Heft 3/4, February 1926.)

Dr Peemöller refers to the only two cases which he has been able to find in the literature, both reported by Lenhartz, and describes the case of a man aged 54, affected with gangrene of the nose in the terminal stages of syphilitic aortitis. He discusses the blood supply of the nose and concludes that in view of the free anastomosis between the various branches of the carotid arteries, gangrene was to be attributed to capillary stasis and atheroma rather than to embolism. A coloured plate shows the line of demarcation crossing the junction of the bony and cartilaginous portions of the nose.

W. O. LODGE.

The Pathological Histology of Rhinoscleroma. E. PALLESTRINI, Institute of Pathology, Turin. (*Arch. Italiano di Laryngologia*, 10th January 1926.)

A microscopic study was made of material obtained from a case of rhinoscleroma obtained by biopsy during life, and post-mortem from the nose, pharynx, larynx, trachea and lungs. The author comes to the following conclusions:—

1. The cells of Mikulicz are capable of containing hyaline globules, which appear in the later stages of degeneration. He does not agree that the cells of Mikulicz and the hyaline globules are separate entities.
2. A proportion of the cells of Mikulicz, namely those in which are formed the hyaline globules, arises from leucocytes and more particularly from plasma cells, but young fibroblasts are also able to contribute to the characteristic cells of Mikulicz.
3. Although it has been suggested, as a rule, that the cells of Mikulicz which contain bacilli cannot contain hyaline droplets it can be shown, by accurate research, that cells of Mikulicz exist which contain both bacilli and hyaline droplets.

F. C. ORMEROD.

Lupus of the Nose and Upper Air Passages treated by Radium. Drs H. MORTIMER WHARRY and OSKAR TEICHMAN. (*Lancet*, Vol. ii., p. 1275, 19th December 1925.)

This paper describes very fully a number of cases of lupus of the nose and upper air passages treated by radium. Contrary to the usual belief, they say, lupus is a disease that affects the mucous lining of the nose, mouth, and upper air passages, quite as much as the skin of the

Abstracts

face and neck. In fact, it very frequently starts in the nose at the muco-cutaneous junction and spreads thence to the skin of the face. A good description is given of the pathology, modes of spread, and clinical manifestations; prognosis and treatment are detailed and the essentials of radium treatment are entered into in detail. The method is not new, but an uninterrupted experience of two years leads the authors to claim very considerable success in its application. They are convinced that the aphonia and facial disfigurement can be cured in most cases by early and careful treatment. They beg for a complete co-operation between the laryngologist and the radio-therapist.

MACLEOD YEARSLEY.

The Treatment of Nasal Obstruction by Submucous Resection of the Inferior Turbinate Bone. DR WILLIAM SPIELBERG. (*Laryngoscope*, Vol. xxxiv., p. 197, December 1925.)

The writer quotes from a previous paper in which he finds that even in carefully selected cases, the results of submucous resection of the septum are not very gratifying. Apart from the usual visible changes of hypertrophy of the inferior turbinals, secondary bone changes are very common. New bone is formed causing the bone to increase in thickness to many times its normal size. Submucous anterior turbinectomy was first described by Stuart Low, but the author claims certain disadvantages in this method. The technique of the writer's operation is briefly an incision beginning high above the anterior attachment of the inferior turbinal and along the pyriform aperture, through mucosa and periosteum to bone, carried down along the entire anterior border of the turbinate. If the proper layer of separation is reached, the mucosa is elevated as in the septum operation, first along the inner surface of the turbinal and then on the outer. The bony lamina is now free in a sac of mucoperiosteum and is detached with a pair of long, thin scissors and removed.

Healing is very quick as there are no raw surfaces. The preserved mucoperiosteum forms a miniature turbinate. The result was good in every case operated upon.

ANDREW CAMPBELL.

Intranasal and External Methods of Operating on the Ethmoid Cells: A Critical Consideration. ROSS HALL SKILLERN, M.D., Philadelphia. (*Annals of Otology, Rhinology, and Laryngology*, December 1925.)

The author believes that as a primary operation the external method would not be deliberately chosen by anyone, but that it has its place only with these indications: (1) When repeated intranasal procedures have failed; (2) pointing or actual rupture externally; (3) in the event of orbital or cerebral complications. In cases showing the indications 2 and 3 the operation is almost always on

Nose and Naso-pharynx

the frontal sinus including the ethmoid rather than on the ethmoid alone. This brings us down to one absolute indication for an external operation on the ethmoid.

From the wide divergence that has manifested itself at the time of operation, between what the X-ray suggests and the actual operative findings, the author hesitates to accept without reserve the interpretations of the lights and shadows found on the X-ray ethmoid film. He doubts if he has ever seen a chronic case in which the entire ethmoid was the primary seat of suppuration, except in the atrophic type, and in the latter, operative intervention seems to be contra-indicated as it only aggravates the infective process. In his practice every fatality following frontal sinus operation has shown atrophic processes in the ethmoid region.

Most men do not like to operate on the ethmoid by the external method. The mildness of the symptoms do not seem to justify an operation of such magnitude.

The congenitally narrow nose is noted as the *bête noire* of the ethmoid operator, and the author does not know a greater indication for the external procedure than a purulent chronic ethmoiditis occurring in such a case.

The difficulties and uncertainties of the external operation are described. In cases where there is no absolute indication for external operation, Dr Skillern states that in his hands there is no difference in the results of the internal and external methods. The internal route has given him quite as much satisfaction as the external with certainly less of the trouble and anxiety that are connected with the latter. Should the external method be decided on let it be done with the idea of exenterating the entire capsule from foremost cell to sphenoid area, and from fovea ethmoidalis to the lamina papyracea. "Unless this is done we shall subsequently find ourselves in the same predicament as if we had done an incomplete internal operation except that in addition we shall have burned our bridges behind us."

NICOL RANKIN.

The Application of Lipiodol in the Radiographic Diagnosis of Maxillary Sinus Disease. Drs DOBRZANSKI and LENARATOWSKI. (*Annales des Maladies de l'Oreille du Larynx*, October 1925.)

Radiography is an essential aid in the diagnosis of maxillary sinus disease.

Obscurity in a radiogram may be due to :—

- (1) Under development.
- (2) A cavity full of serous or purulent exudate.
- (3) One lined by thickened mucous membrane.
- (4) One filled by a benign or malignant tumour.
- (5) One hidden by pathological changes in the neighbourhood.

Abstracts

The authors have recently conceived the idea of injecting substances opaque to X-ray into the sinus in order to differentiate further between the possible causes of obscurity.

Thus, solutions of 5 per cent. protargol and 15 per cent. potassium iodide have been tried, but the fluid nature of these has somewhat detracted from their value.

Last year Reverchon and Worms suggested the use of lipiodol in this sense. This thick, oily fluid is introduced through a cannula pushed through the lateral nasal wall, when about 4 to 6 c.c. are injected. The patient should lie on the affected side and immediately after injection the nasal cavity is packed with a paraffined plug.

Antero-posterior radiograms are taken with the face to the plate, after which the plug is withdrawn and the lipiodol trickles into the naso-pharynx, whence it can be expectorated.

No discomfort is produced, and there is no local or general irritation.

The high percentage of iodine (0.54 gr. to 1 c.c.) should give a beneficial antiseptic action. Numerous experiments on healthy individuals, as well as on the cadaver, have shown exactly what the normal shadow should be. In cases of suppurative sinusitis with polypi and thickened mucous membrane, the shadow is smaller and irregular with uneven outline. Where a tumour fills the sinus cavity, little isolated islands of opaque material can be discerned. Dental cysts can be injected from the alveolar fistula when the relation to the maxillary cavity is clearly shown.

Four typical cases are then quoted and illustrated by radiograms.

J. B. CAVENAGH.

THE LARYNX.

Fractures of the Larynx. M. C. ESCALADA. (*Revista Espanola Y Americana de Laringologia, Otologia Y Rinologia*, No. 5, September 1925, p. 273.)

The author describes a series of interesting and ingenious experiments to elucidate the mechanism of fractures of the laryngeal cartilages. In the first group the force was applied in an antero-posterior direction to the thyroid cartilage, to the cricoid cartilage and to the whole larynx. In the second group the force was applied laterally by compressing the sides of the larynx, again to the thyroid alone, to the cricoid and to both cartilages simultaneously. The force was applied by means of a large pair of wooden forceps worked by a thumbscrew. A manometer to indicate the pressure exerted was attached. In fresh corpses the larynx was fixed against the vertebral column by tetanising the muscles of the neck with an electric current.

The Larynx

The writer arrives at the following conclusions:—

1. Fractures of the thyroid and cricoid cartilage can be produced by pressure from before backwards and by lateral compression.
2. Fractures of the thyroid as a rule are near the middle line and are almost vertical. Fractures of the cricoid take the same direction and are in the anterior segment in the vicinity of the middle line.
3. Fractures of the thyroid are single and of the cricoid either double or single.
4. The force employed antero-posteriorly varies from 55 to 90 kilos, which is less than that required laterally. This may amount to 120 kilos.
5. The thyroid can be fractured more easily than the cricoid.
6. The force required to fracture an unossified laryngeal cartilage is 30 to 50 kilos greater than that required to fracture an ossified laryngeal cartilage, even incompletely.
7. The action of the muscles which fix the larynx facilitates the fracture of the cartilages.
8. It is extremely difficult to fracture the arytenoid cartilages.
9. After fracture of the cartilages the larynx retains a flattened shape according to the direction in which the pressure has been applied.
10. In most cases there are more or less extensive tears of the thyro-hyoid and crico-thyroid membranes.
11. The laryngeal mucous membrane is more easily torn in fractures produced by antero-posterior compression than in those by lateral compression.
12. The extent of the tear in the mucous membrane bears no relation to the length of the fracture of the cartilage.

The description of the experiments is followed by a review of the pathological anatomy of injuries to the larynx and neighbouring tissues.

LIONEL COLLEDGE.

Foreign Body in Larynx with Absence of Cough Reflex. Dr GEORGE T. ROSS. (*Laryngoscope*, Vol. xxxiv., p. 42.)

A child aged 15 months was admitted to hospital with a history of having swallowed a safety-pin. The baby was absolutely quiet, there being no pain, cough, or obstructed breathing.

X-Ray showed a safety-pin lodged in the larynx, the point penetrating the posterior wall about the level of the glottis.

The author's object in reporting the case is to emphasise the absence of cough reflex, which may be misleading.

ANDREW CAMPBELL.

An Easy Method of Performing Tracheotomy. KENELM DIGBY. (*Lancet*, 16th January, 1926, Vol. i., p. 124.)

The child is laid upon its back on a flat surface. An assistant on the child's left places his right hand on the forehead and his left hand

Abstracts

on the occiput and extends the head to its maximum point. The chin is raised so far that the front of the neck forms a flat surface from sternum to point of chin. A median vertical skin incision $1\frac{1}{2}$ inch long starts from the *upper* border of the cricoid. The deep fascia is divided between the sterno-hyoid muscles. The cricoid is laid bare and the fascia below is divided transversely to expose the commencement of the trachea. A single closed pair of pressure forceps is passed down and back close to the trachea and behind the isthmus of the thyroid. The tissue is thus raised and clamped close to the middle line by one pair of forceps and a second pair placed parallel to it. The fascia and isthmus are divided and the two forceps are rotated laterally through 90° and the handles depressed to raise the points. The tissues are thus peeled from the trachea and the first four rings exposed. A vertical incision through the 2nd, 3rd, and 4th rings is made by the knife held pen-wise. A stab is to be avoided because of the danger to the posterior wall.

The author claimed that this operation can be performed in one minute, the operation becomes bloodless, confusion is avoided, and the trachea is held steady, and clearly exposed.

MACLEOD YEARSLEY.

MISCELLANEOUS.

Further Report on Synergistic Anæsthesia as employed in Cases about the Head and Neck. Drs J. C. BECK, H. L. POLLOCK and F. L. LEDERER. (*Laryngoscope*, Vol. xxxv., No. 3, p. 181.)

Synergistic anæsthesia was popularised by Gwathmey, and the authors have been interested in its use for the last four years. The method has been used cautiously and tested carefully in over two thousand cases. The general impression gained is that it is a highly successful method with a minimum of risk.

The technique and dosage are as follows for an average individual of 135 to 150 pounds. Prepare as for general anæsthesia and give nothing by mouth after midnight. Three hours before operation, inject deep into the gluteal region or subcutaneously, one-eighth of a grain morphin sulphate dissolved in 2 c.c. of sterile fresh 50 per cent. solution of magnesium sulphate, together with 2.5 per cent. novocain. Repeat these injections every thirty minutes till three doses have been given. Thirty minutes after the third injection, administer per rectum a solution of ether 3 oz., olive oil 3 oz., paraldehyde 2 dr.; this is given very slowly, taking twenty minutes for administration of the 5 ounce mixture. Keep in a darkened room and transport to the theatre as quickly as possible.

Miscellaneous

The analgesic operative state produced, may be compared to some of the forms of alcoholic intoxication. The majority of patients were responsive to questioning and none were apprehensive. In some cases accessory anæsthesia had to be resorted to, but it took comparatively small amounts of ether or infiltration anæsthesia. Such insufficient narcosis was observed in 14 per cent. of the cases dealt with. Alcoholics responded very well to synergistic anæsthesia. On the following day, the patients' recollection of the operation is nil or vague. The majority are quiet on return to the ward; some are talkative. The post-operative anæsthetic state is, however, an advantage, as they remain drowsy until late in the evening and only about 0.5 per cent. need an analgesic. There is no epigastric distress whatever.

In some instances, a patient has been too deeply narcotised, and these are returned to their rooms and not operated upon till partially recovered from their narcosis. Only one fatal result was met with and that could not be directly attributable to the anæsthetic. Complete exenteration of both ethmoids was performed and the patient bled freely; packing was resorted to, and apparently hæmorrhage ceased, but two hours later it was noticed by the nurse, and probably it had been going on ever since the completion of the operation. Some blood had entered the lungs and eventually the patient died. It is important to note that a patient under synergistic anæsthesia is not so unconscious as to have his reflexes abolished, so that should blood trickle down the pharynx, he will either expectorate or remonstrate. The types of operation included all the minor and major surgical procedures usually carried out by the ear and throat surgeon. The patients ranged from 5 to 74 years of age. There were no kidney or bladder disturbances in any of this series. Acidosis was present in a very small percentage. Many patients were repeatedly anæsthetised with no evidence of any drug tolerance. Excessive secretions in the pharynx were not present unless ether was given as an accessory anæsthesia. At no time was there any cyanosis or loss of body heat. The pulse was somewhat slower, but little change was noted in blood pressure. Recovery from the analgesia was rapid and not followed by lack of appetite. The authors have not as yet been able to use the method extensively in children, because of their fear of injecting morphin—they hope to find a substitute. The paper is published in the hope that other work will help to investigate further so that a series of 50,000 to 100,000 cases may be reached before logical statistics may be worked out. Quite half the bibliography refers to Gwathmey.

ANDREW CAMPBELL.