labyrinthine sensitivity varied from day to day, it might be that investigation of the threshold would be of no value. That, in fact, was one of the reasons which had made him abandon that part of the problem.

The suggestion that the sudden collapse was an active phenomenon was very interesting, and he was grateful to Mr. Scott for drawing his attention to it. It was an added factor in the differentiation of the two syndromes. In the canal type there was a flaccid collapse. The patient fell, or rather lay, down in order to increase his base. In the otolith type he was thrown down. The original simile of " collapsing like an empty suit of clothes", was therefore inaccurate. It might be better to speak of " collapse like the closing of a clasp-knife ".

ABSTRACTS

EAR

Complete Apicectomy. A new technique for the complete exenteration of the Apical Carotid Portion of the Petrous Pyramid. JULIUS LEMPERT. (New York.) (*Archives of Oto-Laryngology*, xxv, 2, February, 1937.)

The confusion which exists in descriptions of operations on the petrous pyramid is partly the result of inadequate detail in anatomical text-books regarding the structure. Lempert suggests that the petrous temporal should be viewed in two portions: (1) the basal labyrinthine portion and (2) the apical carotid portion. He describes each portion in detail. Suppurative peri-labyrinthitis is seldom diagnosed prior to operation, when fistulous tracts leading to infected cells and epidural collections of pus may be found. Suppurative apicitis may appear secondary to acute purulent otitis media without mastoiditis, or it may exist concurrently with mastoiditis or as a sequel to suppurative peri-labyrinthitis appearing after mastoidectomy. The majority of cases of apicitis recover without any surgical intervention, the infection never passing beyond the stage of congestion. Apparently the infection tracks directly through the tympanic cavity into the pyramid in many cases, leaving the mastoid process uninvolved. It is said, however, that 20 per cent. of the patients die of meningitis. Since the first report of Kopetzky and Almour in 1930, " the otological world has become petrositis conscious ". The subject is still controversial. Apicitis does not always become suppurative and only when suppuration is recognized clinically and radiologically does surgical intervention become essential. But there is no middle course in treatment and if suppuration is diagnosed it must be treated surgically. The question is not, " Is operation

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advisable for petrositis ?" but rather, "Is operation advisable for suppurative apicitis ?" and the answer is obvious. The problem of the best surgical procedure has been much discussed. The methods practised are those of Kopetzky and Almour, of Ramadier and of Frenckner, but none permits of complete inspection and exenteration of the infected area. Simple drainage is insufficient. Apicectomy must replace the present method of apicotomy.

The technique of apicectomy may be divided into the following stages:

1. Performance of radical mastoidectomy.
2. Exposure of the basal labyrinthine portion of petrous pyramid.
3. Creation of a surgical approach to the apical carotid portion of the petrous pyramid.
4. The complete exenteration of the bony cellular structure of the apical carotid portion of the petrous pyramid after complete exposure of the apical course of the internal carotid artery.

The operation involves upward prolongation of the mastoid incision, additional incision to create a flap of anterior wall of the meatus, complete exposure of the lateral sinus, of the dura of middle fossa and of the dura in Trautmann's triangle, removal of posterior root of zygoma, of lower border of squama and of anterior bony meatal wall. The carotid canal must be exposed in its entirety. Just as the sigmoid sinus acts as a guide to complete exenteration of the mastoid process, so must the internal carotid artery guide the operation in the removal of the apex of the petrous pyramid. The writer has never encountered the pericarotid plexus of veins described by anatomists, and bleeding has not been troublesome. A complete apicectomy is performed by following the artery and removing the surrounding bone.

Nine cases are reported. Four of the cases were diagnosed before operation as suppurative apicitis. In two cases the suppurative apicitis was already complicated by suppurative meningitis. Apicotomy was also performed in five cases of suppurative meningitis in order to locate the infection and to expose the dura close to the petrous apex in order to drain the cisterna pontis at this point. Each one is described in detail and the paper is illustrated by nine drawings which clearly depict the steps of the operation.

DOUGLAS GUTHRIE.

Tuberculosis of the Petrous Apex. EUGEN GRABSCHEID. (Wien.) (*Archives of Oto-Laryngology*, xxv, 1, January, 1937.)

Describing in detail the clinical history and *post mortem* findings in a case of tuberculosis of the base of the skull in a man, aged

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37 years, the writer remarks on the rarity of the condition. Cases of tuberculosis of the petrous bone coexistent with multiple tuberculous foci of the cranial vault have already been recorded, and in children the condition is not uncommon. In a study of fourteen cases of generalized tuberculosis in children, aged 4 months to 4 years, Grünberg found tuberculous osteomyelitis of the temporal bone in twelve cases, and further showed that when the tuberculous process was localized in the petrous apex it showed a tendency to spontaneous healing. Grabscheid is of opinion that the condition is often overlooked and he regards persistent otitis in sucklings as often tuberculous. In the case here reported, the patient was an adult, the drum membranes were intact and the cochlea and vestibular apparatus were gradually involved so that there was no spontaneous nystagmus or vertigo, and the hearing was retained on the right or less affected side. The rotation test gave a slight reaction from both sides but the caloric test produced no reaction on either side. It appears doubtful whether the condition could have been diagnosed during life as the choked disc and neurological findings suggested a tumour of the cerebello-pontine angle. The paper is illustrated by three photographs of the *post mortem* appearances.

DOUGLAS GUTHRIE.

Thrombosis of the Sigmoid Sinus; a critical analysis. J. H. MAXWELL. (Ann Arbor.) (*Archives of Oto-Laryngology*, xxv, 2, February, 1937.)

Septic thrombo-phlebitis may attack the sigmoid sinus either by direct extension through the sigmoid plate and the development of a perisinus abscess, or by thrombo-phlebitis of the small veins extending from the middle ear to the sigmoid sinus. The surgical procedures recommended from time to time have varied from simple occlusion without jugular ligature to radical operation on the sinus bulb and vein after the manner of Grunert. The writer has practised ligation of the jugular vein in the majority of cases. In this paper he reports his observations during ten years, on fifty-two consecutive cases of sigmoid sinus thrombosis of otitic origin. The death rate was 36 per cent., but meningitis was present before operation in six cases, three of the patients were diabetic, and in four cases the thrombosis was not diagnosed but was discovered at *post mortem* examination. There is a direct relationship between the mortality rate and the duration of the sepsis before operation. Few of the patients recover if septicæmia has been present for more than seven days (eight cases, seven deaths). Early diagnosis is of supreme importance. The idea is prevalent that sinus thrombosis indicates a long neglected acute suppurative mastoiditis but that is not always so, as the condition may develop

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within the first week of the otitis. Under such circumstances the infection has passed to the sinus by the thrombo-phlebitic route, without an intervening perisinus abscess and with an intact sigmoid plate. The prognosis is good in such early cases. In the series here reported, thirteen cases had suffered from acute otitis for eleven days or less and there were only three deaths. For patients suffering from sinus thrombosis secondary to chronic suppurative otitis the prognosis is bad: twelve cases, with eight deaths, in the present series. Blood culture was positive in twelve cases (ten of which died) and negative in twenty-one cases (nine deaths). In general it may be said that prognosis is good in patients who are diagnosed early and treated promptly.

DOUGLAS GUTHRIE.

Malignant new growths of the Ear. A. ZEBROWSKI. (*Monatsschrift für Ohrenheilkunde*, lxxi, 227, 1937.)

Seven cases of malignant aural disease are described in detail. In the author's opinion malignant neoplasm of the ear may develop at any age. Although sarcoma is chiefly met with in children and young adults, carcinoma may also occur at an early age.

Cancer of the ear probably originates in the tympanic cavity, but the underlying causes are unknown.

The earliest and most constant symptoms are pain in the mastoid region, and severe headache on the affected side. The marked symptoms such as facial palsy, bleeding from the ear and enlargement of lymph glands in the vicinity of the disease and in the neck, must be considered as late manifestations denoting extensive destruction of the temporal bone.

Early and complete exenteration of the growth is not sufficient to eradicate the affection, and at the present time the mortality is 100 per cent. X-rays and radium should be used in the early stages of the disease.

An early and positive diagnosis of aural cancer is impossible, but serological tests might be of value in recognizing the malignant nature of the disease.

The paper is illustrated with four photographs.

DEREK BROWN KELLY.

NOSE

The importance of the Uncinate Process in the Treatment of Frontal Sinus Disease. K. GOLDBERGER. (*Monatsschrift für Ohrenheilkunde*, lxxi, 175, 1937.)

The vascularity of the middle turbinate permits of rapid hypertrophy in rhinitis with consequent obstruction to the sinuses opening into the middle meatus. If the uncinate process is small,

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considerable swelling of the turbinate and infundibular mucosa may take place without complete closure of the middle meatus; if large, it narrows the hiatus to a small fissure, and the slightest swelling causes obstruction.

Diagnosis of uncinate hypertrophy is established by probing. With a straight probe a "double turbinate" may be recognized as consisting of two parts—one lying against the septum (the true middle turbinate) and a lateral portion—the hypertrophied uncinate process (seldom the bulla-ethmoidalis).

Even in the quiescent state, these hypertrophies of the middle meatus, especially of the uncinate process, may cause repeated frontal headache, feeling of pressure on the forehead and around the eye, migraine, and slight lassitude.

During an acute exacerbation, however, there may develop unbearable headache, cerebral symptoms (vomiting, slowing of the pulse, giddiness, diffuse headache, disturbance of consciousness), and sometimes even meningeal signs. All these symptoms vanish immediately the frontal sinus has free drainage.

If no improvement results from conservative treatment (sweating, light baths, cocaine applications) surgical interference is indicated. Mere removal of the anterior end of the middle turbinate is not sufficient. The whole uncinate process (mucosa and bony substratum) should be taken away. Killian recommends removal with the nasal scissors, Hajek prefers a straight knife, Bruggeman employs the somewhat rough tearing away with an ethmoid hook while Uffenorde uses forceps.

The author uses strong Kofler sphenoidal forceps which, in contrast to the pointed scissors and knives, are less dangerous. Sometimes the bulla-ethmoidalis is pressed outwards, and some of the ethmoid cells are opened by the instrument. This is actually an advantage, as the approach to the frontal ostium is thus widened.

The same procedure is recommended for chronic frontal sinusitis. Good drainage is obtained which promotes healing and lessens the danger of recurrence.

DEREK BROWN KELLY.

Recovery from Abscess of the Frontal Lobe secondary to Empyema of the Sphenoid Sinus. A. KAPLAN. (New York.) (*Archives of Oto-Laryngology*, xxv, 1, January, 1937.)

Although intracranial complications following infection of the sphenoidal sinus are not uncommon, only six cases of abscess of the brain have been reported. In two of the cases operation was performed but both patients died, and *post mortem* examination revealed cerebral abscess and suppuration in the sphenoid sinus only. In each of the other four cases the cerebral abscess was not suspected during life but was found at autopsy. The present

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report deals with a case of sphenoidal sinusitis complicated by a frontal lobe abscess and is believed to be the first case on record in which both lesions were successfully treated by operation. The report may be summarized as follows :

The patient, a woman aged 20 years, exhibited infection of the upper respiratory tract, bitemporal headache not relieved by drainage of maxillary sinus, epistaxis, pain in right eyeball, and papillœdema. There was hyperalgesia of the right side of the face, and ataxia. Empyema of the right sphenoidal sinus was drained but papillœdema advanced. Ventriculography revealed the site of the cerebral lesion. An abscess of the frontal lobe was drained and eventually the patient recovered completely.

The paper is illustrated by radiograms showing displacement of the ventricles to the left and a defect in the right frontal horn, and, after operation, a Mosher drain in the abscess of the right frontal lobe. The symptoms which suggest a cerebral abscess as a complication of sphenoidal sinusitis are : (1) Upper respiratory tract infection followed by frontal headache and pain in the eyeball and trigeminal area on the same side. (2) Headache referred to the torcular and stiffness of neck. (3) Early papillœdema and (4) facial paresis of the contralateral side. The probable pathway of infection from the sinus to the brain leads directly through the bone. A perforation of the roof of the sphenoidal sinus was demonstrated in the case reported by Druss. The purulent exudate extended around the pituitary gland and then along the cribriform plate and on to the orbital surface of the frontal lobe. This was probably the pathway of infection in the case now reported. Treatment consists in complete removal of the primary source of infection and drainage of the abscess after allowing time for encapsulation and after sealing off the subarachnoid space to prevent meningitis.

DOUGLAS GUTHRIE.

Seromucous Cysts at the entrance to the Nose. V. L. HLAVACER. (Prague.) (*Acta Oto-Laryngologica*, xxiv, 3-4, April, 1937.)

The author has observed thirteen cysts at the entrance to the nose of which twelve were histologically examined. Of these, two were believed to be of dental origin (17 per cent.) and lined with pavement epithelium. Ten cysts (83 per cent.) had the character of sero-mucous cysts, their epithelial lining being formed of cylindrical cells with a base of cubical cells. Amongst the cylindrical cells there were always to be found goblet cells, which in certain cases formed masses suggesting intra-epithelial glands. By staining, one could prove the presence of mucus in the goblet cells in all cases. The epithelial lining had the character of the

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nasal respiratory mucous membrane so that the cysts were considered to be formed from inclusion of this mucosa.

From this histological observation these cysts were considered to be developed in an inclusion of the embryonic tissue from which the nasal mucosa originates, as Klestadt supposed. This origin is confirmed as much by histological proof as by the localization of the cysts which arise at the entrance to the nose where the nasal bud unites with the maxillary buds and consequently where there is a greater possibility of these inclusions occurring.

H. V. FORSTER.

TONSIL AND PHARYNX

Pathological Hypertrophy of the Lymphatic Ring of Waldeyer and its influence upon Physical and Psychical Development. T. DE BAJKAY. (Budapest.) (*Acta Oto-Laryngologica*, xxiv, 3-4, April, 1937.)

Adenoids and hypertrophy of the tonsils occur in all kinds of people and give rise to numerous symptoms. In adenoid enlargement interference in expiration takes place early as there is a tendency for the mass to be forced against the choanae during expiration. When mucus accumulates or the tissue becomes swollen from inflammation the interval between the mass and the lower borders of the choanae becomes obliterated, and temporary complete obstruction results. Enlargement of the lingual and the palatine tonsils increases the difficulty in breathing, which becomes more noticeable during sleep.

In discussing the various well-known disabilities associated with enlargement of the lymphadenoid tissue of the throat, the effect of the removal of tonsils and adenoids on conjunctivitis lymphatica is considered. The eye condition was not much influenced after the removal of the palatine tonsils alone but a much more favourable result followed removal of adenoid hypertrophy. The best result followed removal of both tonsils and adenoids, even though the amount of adenoid tissue was small and not causing obstruction.

A table of statistics shows that 1,001 cases were operated upon for adenoids alone, 328 for tonsils alone and 412 for both adenoids and tonsils. In six cases the tonsils were reduced by morcellement. The operations were performed under local anæsthesia and out of 1,809 patients only three were given superficial ethyl chloride anæsthesia and only six ether narcosis.

The adenoids were removed by means of the Beckmann adenotome. In simple hypertrophy of the tonsils, especially in younger children, intra-capsular morcellement is considered to be enough.

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Hæmorrhage during the operation for complete removal is arrested by the galvano-cautery and in a few cases of brisk hæmorrhage the pillars of the fauces were sutured for twenty-four hours.

Because of the possibility of secondary hæmorrhage and for the better treatment of the patients, none of them are operated upon as out-patients, all being kept in bed for 4-5 days. On the sixth to seventh day treatment of the fossae by painting with 10 per cent. silver nitrate is begun, to stimulate epithelialization. One fatality occurred in a child of six years injected with a local anæsthetic after the operation had only just begun.

H. V. FORSTER.

MISCELLANEOUS

The use of Sulphur Dioxide in the Treatment of the Epidemic Cold. A. G. RAWLINS. (San Francisco.) (*Archives of Oto-Laryngology*, xxv, 2, February, 1937.)

The common cold is considered as an infectious epidemic and endemic disease due to a filterable virus, although environment, allergy and anatomical defects may play some rôle in the ætiology. No definite organism has been established as the cause, and visible bacteria are secondary invaders concerned only in the prolongation of the disease and its complications. The period of incubation is one to three days and the period of immunity three to four months. Many so-called colds are merely a " flare up " of infection in the posterior nasal sinuses or are secondary to a streptococcal pharyngitis. A blood count of thirty cases during the first twenty-four hours showed normal results and not a leukopenia as in early influenza. In one hundred cases the temperature in the first twelve hours was slightly raised, but rarely above 99·5° F. The writer learned from his brother, Dr. T. E. Rawlins, Professor of Plant Pathology in the University of California, that the filterable viruses which attack plants, animals and man, are unaffected by ordinary antiseptics but that plant viruses are destroyed by low concentration of sulphur dioxide. This suggested to the writer to expect that the filterable virus of the common cold might be destroyed in the early stages by this means. He treated eighty patients, in the first stages of cold, by inhalation of sulphur dioxide and found that while fourteen had no relief, sixty-six were completely cured on the first or second day after treatment. The same treatment was given to other patients with colds on the third and fourth day of the attack, with negative results, and the treatment was likewise useless in epidemics of streptococcal sore throat. The patient is given a 3 oz. bottle, half filled with a saturated solution of sulphurous acid and is directed to inhale gently the sulphur dioxide gas for ten minutes three times a day. By shaking the bottle

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or by the warmth of the hand, more gas is liberated. The sulphurous acid solution must be saturated (6 per cent.), must be freshly prepared, and must not be deeply inhaled. Deep inhalation is harmless but causes cough and discourages further use. The writer is convinced that the treatment is safe and is worthy of careful trial, but it is efficacious only if applied at the first sign of a cold. DOUGLAS GUTHRIE.

The Early Bacteriological Diagnosis of Diphtheria. W. P. CARGILL and G. J. CRAWFORD. (*Lancet*, i, 751, 1937.)

The authors, after a short survey of recent work, describe the results given by the serum-treated swab as compared with those given by the ordinary direct smear and by culture on Löffler's medium. They describe the preparation of serum-treated swabs and give the results in 428 cases, classified as typical diphtheria, clean throats, and doubtful cases. From these results, they do not recommend the serum-treated swab as a routine method for the diagnosis of diphtheria. Apart from the difficulties of distributing freshly made swabs to the general practitioner and dealing with them on return to the laboratory, the results given by them show only slight superiority over those given by the simple direct smear. All swabs sent from suspected cases of diphtheria should be examined by direct smear after inoculating a Löffler slope or other suitable medium. The writers believe that about half the swabs sent for examination from cases of diphtheria will be positive in direct smears made in this way. MACLEOD YEARSLEY.

The Rhinogenous Intracranial Complications. GUNNAR HAGERUP. (Copenhagen.) (*Acta Oto-Laryngologica*, 3-4, April, 1937.)

Intra-cranial complications in accessory sinus disease occurred in thirty-six out of 1,330 patients or in about 3 per cent. of the cases. Of these cases three followed operation and one case traumatic frontal sinusitis.

Among the thirty-three cases of spontaneous origin there were fourteen cases of leptomeningitis or subdural abscess, twelve of cerebral abscess, four of pachymeningitis and extradural abscess, and three of cavernous sinus thrombosis.

At the Municipal Hospital in Copenhagen the number of cases of suppurative otitis and of inflammations of accessory sinuses has for a long series of years been distributed in the ratio of 7 to 1.

The intra-cranial complications must in twenty cases be presumed to have originated from the frontal sinus, in nine from the ethmoid cells and in three from the sphenoid sinus. There were no cases of intra-cranial complications originating from the maxillary sinus.

On the basis of this material; symptomatology, diagnosis, prognosis and treatment are discussed and it is concluded that

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when a pleocytosis has developed, radical evacuation of the primary focus and exploratory exposure of the dura are indicated. If a pachymeningitis is found it is widely exposed until it is seen to be surrounded by sound dura. Cerebral puncture may also be indicated.

[Abstract of Author's Summary.] H. V. FORSTER.

Otogenous Abscess of the Frontal Lobe : Review of the literature and reports on five cases. J. M. NEILSON and CYRIL B. COURVILLE. (*Acta Oto-Laryngologica*, Supplementum xxi.)

In a review of the literature an attempt has been made to abstract systematically all the verified cases reported. They find thirty-four verified cases of frontal abscess; five cases not previously published are also reported with autopsy findings in four and operative verification in the fifth.

The pathology does not differ materially from that of otogenous brain abscess in other situations and in its symptoms the stage of invasion is very similar to that of the same stage in temporal or parietal otogenous abscess, i.e. headache, fever and general illness and relatively frequent convulsions. This stage, however, may be silent. The manifest stage does not appear to have a characteristic symptomatology. The third or terminal stage is usually accompanied by paralysis as well as signs of failure of circulation and respiration.

The authors point out that while it is true that the majority of cerebral abscesses of otitic origin are, according to Körner's law, to be found in the vicinity of the petrous bone, lives may be lost if the law is followed too rigidly.

The frontal lobe is the most frequent location for an unusual lobar cerebral abscess, next comes the parietal lobe and last the occipital.

[Abstract of Authors' Summary and Conclusions.]

H. V. FORSTER.

Experience in the Radiotherapy of Malignant Growths of the Upper Respiratory and Food Tracts. H. R. SCHINZ and A. ZUPPINGER. (*Münchener Medizinische Wochenschrift*, April 9th, 1937.)

This article summarizes the results obtained by radiotherapy in the treatment of carcinomata of the upper food and air passages. Vital statistics showing the comparative increase in the occurrence of carcinoma in these positions are given.

The results of radiotherapy in the two periods 1919-28 and 1929-35 are tabulated and compared. There is a marked improvement in the second period as compared with the first. The steps to be taken to improve the results in the future are considered and the authors take an optimistic view. G. H. BATEMAN.

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