lympathic connection, for instance, between the sinus of the face and the bronchial tree. It is not yet possible to decide which of these hypotheses is justified.

Bowen's Disease of Soft Palate.—E. HALPHEN.

The patient is a man, 62 years of age. On the soft palate he shows a lesion which has exactly the appearance of Bowen's disease. This clinical impression is confirmed by the fact that the patient has had this lesion for three years past and the lesion does not seem to develop. On the other hand, the histological examination is very definite: this is a spino-cellular epithelioma. What, therefore, is the connection between Bowen's disease and cancer ?

Connection between the Anatomy of Sphenoidal Sinuses and the Ætiology of Retro-bulbar Optic Neuritis.

—PROFESSOR SEGURA.

The writer has operated on numerous cases of retro-bulbar optic neuritis. He has never found, inside the sphenoidal sinuses, lesions which could explain the optic neuritis. On the other hand, he has made an observation which is worthy of note: to wit, that in such cases the sphenoidal sinuses are always extraordinarily large. The writer submits radiographs in support of his assertion.

ABSTRACTS

EAR

Ventricular communication and Internal Hydrocephalus as complications of Brain Abscess. F. MCGUCKIN. (*Lancet*, 1936, ii, 1387.)

This paper presents certain facts, illustrated by three cases, concerning the establishment of a communication between the lateral ventricle and an abscess of the brain, and discusses the theoretical aspects of the problem. The discussion is confined to cases arising in association with otogenic temporal lobe abscess, and draws attention to the internal hydrocephalic factor. The author's conclusions are (1) Ventricular communication may arise as a result of rupture of ventricle into abscess. Recovery may follow. (2) Internal hydrocephalus is sometimes considerable, and may constitute a significant factor in increased tension. (3) Accidental relief of pressure from this cause is, on occasion, beneficial, but it is suggested that direct surgical attack on hydrocephalus is

fraught with danger. (4) Internal hydrocephalus probably assumes an important rôle at a time when dehydration therapy and evacuation of abscess content provide the safest control.

MACLEOD YEARSLEY.

Simple Mastoid Operation and some functional results. FRED. W. GRAEF. (*The Laryngoscope*, xlvi, 6, June, 1936, 427.)

It is the author's contention that in cases of acute otitis media a history of over four weeks' suppuration should be sufficient grounds for refusing further conservative treatment, advising the simple mastoid operation to safeguard the hearing.

Although the loss of hearing following such an operation in acute otitis may be nil, or very small, a review of the series given here leads one to believe that the amount of function which is preserved is probably over-estimated.

The series of cases quoted is from patients up to twelve years of age, with no previous history of acute otitis media. They are divided into three groups according to the duration of otitis before operation (*a*) 1-2 weeks, (*b*) 3-4 weeks and (*c*) 6 weeks. The average loss of hearing was respectively 16·8, 17·8 and 19·8 per cent.

It is interesting to note that the variation of hearing loss between the three groups is very small, the damage being early and increasing but slightly between the second and fifth week.

The deafness is conductive in character with possibly a secondary nerve involvement, especially when the otitis media is associated with the acute infectious diseases of childhood.

The ideal time for surgical intervention appears to be the second and fifth weeks, the author quoting Neumann's large series of cases in which complications occur with alarming frequency, before and after this period.

Early operation is not without considerable risk, and the delay into the third and fourth week increases the hearing loss so slightly as to be almost negligible. Although each individual case must be treated as a distinct entity, the majority will run a course which makes it possible to operate during the ideal time.

MYLES L. FORMBY.

Suppuration in the Petrosal Pyramid. (Symposium before the American Otological Society, May 28th, 1935.) (*Annals of O.R.L.*, xliv, 1002, 1935.)

In the introductory remarks the President, Samuel J. Kopetzky (New York), gave the object of this symposium as an attempt to clarify some of the points in the pathological diagnosis and treatment of infections of the petrosal pyramid, either of otogenic or hæmatogenic origin. Pathologically two types of lesion might

occur, an osteitis in cancellous bone, or true osteomyelitis in diploetic bone. The type of lesion would depend on the histological structure of the pyramid itself.

The subject of anatomy was introduced by Guild (Baltimore) who laid stress on the great variability in both the gross and the microscopic anatomy. The hard bone forming the labyrinth and internal ear, and a hard cortex of varying thickness are more or less constant, but the remainder of the interior of the bone varies greatly in respect of pneumatization, and the relative amount of red and fatty marrow-containing bone. The pneumatization may proceed to the tip, and may commence either from the cells of the Eustachian tube, the middle ear, or the mastoid antrum itself. The relationship to the cranial nerves and the blood sinuses is also described in detail with their possible diagnostic significance.

Jones (New York) considered the pathological changes in the petrous to be similar to those in acute mastoiditis. Infection was probably more frequent than was generally thought, but might subside with adequate surgery of the mastoid process or even, in some cases, myringotomy.

Gordon Wilson (Chicago) related his experiences based on the autopsy findings in 50 cases of petrositis, varying from 5 weeks to 15 years of age. Air cells in the tip of the petrous were, in his experience, rare, and those which were found behind the semicircular canals were to be regarded as mastoid cells, and treated as such. When infection occurred at the tip it was due to vascular spread as shown by thrombi present in the veins. Since marrow contained in the bone must be regarded as part of the defensive system, ruthless operation at the first signs of inflammation should be deprecated.

Fowler (New York) discussed the radiological standpoint. The great variation in the anatomy makes some form of comparison essential, either the previous X-ray, the X-ray of the opposite side, or failing either, the lateral X-ray of the mastoid on the assumption that, if the zygomatic and post-sigmoid areas are very pneumatic, the petrous pyramid will probably be so too. If there is a history of previous otitis media reliance on the opposite side as a comparison is dangerous. Osteitis in the pneumatic bone will show as blurring of cells, osteomyelitis as areas of decreased density and sequestration, but these changes may not appear for 10 days. He emphasized that X-ray evidence of pathological changes does not necessarily mean that operation is inevitable any more than do similar changes in acute mastoiditis. In addition the negative X-ray does not mean that no changes are present. The best positions for making exposures are the vertico-mental position of Taylor. The direct P. A. Stenvers' position is also good but necessitates two plates and introduces possibilities of error in exposure.

Abstracts

The description of the clinical picture and diagnosis was introduced by Seydell (Wichita) basing his observation on 41 cases. The picture is typical; signs generally developed during the post-operative phase of acute mastoiditis; rarely in otitis media prior to operation. The main characteristics are as follows:

1. Pain deep in, or around the eye; severe, intermittent, frequently worse at night (64 per cent.)
2. Low grade sepsis (70 per cent.).
3. Recurrence of discharge from the ear or mastoid wound (41 per cent.), or continuous discharge (46 per cent.).
4. Abducens nerve palsy occurring from 3 to 60 days after operation, averaging 3 weeks (31 per cent.).

89 per cent. of the patients were under 40 years of age and 34 per cent. under 10 years of age.

Eves (Philadelphia) regarded pain, associated with nervous irritability and pleading for narcotics, as the most characteristic symptom. He pointed out that periods of quiescence might occur, with the pain behind the eye lessened, or passed off. Such periods might last for a few days to several weeks, and end in a fulminating meningitis.

Nash (Rochester) drew attention to the condition of chronic petrositis due to spontaneous drainage of an acute condition. In this case the acute symptoms disappear, but the discharge continues. Many such cases will heal spontaneously, but any recurrence of pain demands immediate drainage.

Treatment was introduced by Page (New York), who held that the undoubted occurrence of cases which recovered with simple mastoidectomy did not justify leaving the petrous cells undrained when these were known to be present, and infected. Headache, fever, or VIth nerve palsy, following a mastoid operation, justified re-opening the mastoid, the extent of operation varying from a mere opening of the perilabyrinth cells, to a radical operation with removal of the apex, which latter should rarely be called for.

Mullin (Cleveland), however, presented a plea for observation following a simple mastoid operation and time to see the effect of this before any more radical procedures were carried out. This standpoint was supported by Ziegelman and Druss of New York, who held that suppuration of the petrosal pyramid was a condition which tended to heal spontaneously. Indications for operations were :—

(*a*) With the mastoid unopened very severe headache or eye pain, meningeal signs, and not sufficient change in the mastoid process at operation to give rise to these symptoms.

(*b*) After mastoidectomy. Persistence of pain, or late pain with other signs; recurrence of discharge from the mastoid wound with pain.

In respect of this last being regarded as an indication for operation, the author considered that a great many cases falling into this group would recover without it, and only observation of the individual case could justify operative procedure.

Almour (New York) stressed the importance of localization of the lesion. Lesions confined to the internal perilabyrinthine area are treated by mastoidectomy, and opening up of the tract above or below the labyrinth according to the localization. Lesions approaching the internal auditory meatus are best reached by separating the dura forwards and removing such bone as is necessary. Lesions confined to the anterior perilabyrinth area may be reached by approaching the labyrinth above, but generally necessitate a radical operation and approach by one of two routes.

(*a*) The extra-petrosal (subdural route) separating the dura from the superior surface of the petrous bone.

Such operation has the advantage of draining any extradural abscesses which may be present, and approaches the apex, but fails to give access to the posterior surface of the petrous bone, or to enable the inner tympanic wall to be inspected for the presence of fistulae.

(*b*) The intra-petrosal approach of Ramadier and Almour is probably more rational and less dangerous.

A radical operation is performed and the inner tympanic wall then inspected for any fistulae indicating the route of infection, and such fistulae are then opened up.

Eagleton (Newark) gave a classification of petrous lesions. He regarded the fatty marrow, normally present in this situation, as becoming converted to red marrow on the approach of infection, and such red marrow has definite protective powers, so that there is a tendency to cure, following adequate mastoid drainage ; indeed early operation may precipitate complications in a quiescent case. He drew attention to a symptom not previously mentioned—anæsthesia of the cornea. Absence of vestibular response to rotation with retained hearing might point to a pontine cisternal meningitis, and if present demanded operative treatment.

The symposium was summarized by Lillie (Rochester), and others took part in the discussion, but these elicited no new facts which had not been mentioned in the earlier papers. GILROY GLASS.

Acute Suppurative Otitis Media in Measles : A report of 427 patients. HORACE J. WILLIAMS. (Philadelphia.) (*Annals of O.R.L.*, xlvi, 956, 1935.)

1. The incidence of acute suppurative otitis media in hospitalized measles patients is approximately 22 per cent.

2. Approximately 50 per cent. of patients affected with otitis in measles have a bilateral affection.

Abstracts

3. Early myringotomy in acute suppurative otitis media in measles has a distinct tendency to prevent the development of surgical mastoiditis.

4. Approximately 10 per cent. of the patients who suffer from acute otitis media in measles develop surgical mastoiditis.

5. 77·7 per cent. of the patients with otitis during measles are under six years old.

[Author's Summary.]

Development of a Theory of Hearing and a Method of Galvano-therapy based upon the Phenomena of "After Images" and Neuro-electricity. E. KUPFER. (*Monatsschrift für Ohrenheilkunde und Laryngo-Rhinologie*, 7.68 jahrgang (1934).)

In this series of papers the author deals at length with the subjective phenomenon of "after images" in a wide variety of sensory modes. The phenomenon is attributed to a post-excitatory reversal of certain electro-chemical processes which are considered to be responsible for the excitation process itself. This part of the work covers a very wide field, and suffers from a tendency to one-sided selection of the data which are put forward. In addition, too little attention is devoted to the part played by central nervous processes in the phenomenon under consideration. The impression is gained that, in all sensory fields, the electrical processes in the peripheral mechanisms are of predominating importance.

An interesting review of the various theoretical possibilities which are involved in the so-called membrane hypothesis of origin of the Wever and Bray phenomenon is given, though here the probably erroneous view of its initiation by the hair cells appears to be accepted.

Tinnitus is considered to be a pathological development of the electro-chemical processes described as being responsible for excitation (and, conversely, for the phenomenon of "after image"). A system of galvano-therapy designed to control these processes is described, though the data regarding the indications and results of such treatment are small.

C. S. HALLPIKE.

On the Question of Polyotia. O. KAHLER. (*Arch. Ohr-, u.s.w. Heilk.*, 1936, clxii, 248-53.)

On closer examination, many cases of so-called polyotia are found to be instances of large auricular appendages. Genuine polyotia means the formation of a second auricle with an indication of a meatus and a rudimentary middle ear. Apparently only one such case has been described in the literature (de Kleyn). The author's case, a baby, aged 3 months, appeared to have a second auricle just above the normally formed left ear (see illustration).

This extra " auricle " has a hard cartilaginous part, a soft portion below resembling a lobule. Also a rudimentary depression indicating the meatus with a hard strand leading to a small defect in the squamous temporal bone. The appendage was dissected away under local anæsthesia and examined by serial section.

The sections showed skin structures, cartilage and mucous glands. In the deeper part the author was surprised to find a complete tooth germ containing a typical incisor tooth. The tumour must therefore be grouped among the dermoids and teratomata and most likely had its origin in the first pharyngeal pouch at a very early stage.

J. A. KEEN.

The Hard of Hearing Child. APHRODITE J. HOFDOMMER. (Webster Groves, Mo.) (*Jour. A.M.A.*, August 29th, 1936, cvii, 9.)

Recent surveys in the public school system of the United States reveal that 6 per cent. of the children have defective hearing. It is believed that deafness is on the increase despite the rapid progress made by all institutions interested in checking this condition. There are three times as many repeaters among the hard of hearing children as among their normal companions.

In the public school of Webster Groves, St. Louis County, the following programme has been in effect for the past four years. During the first two months of the school year every child from the third grade through high school is tested with a 4-A phonographic audiometer. Those below this grade who are believed to be hard of hearing are tested individually. Children with a hearing loss of six or more dynes in both ears are re-tested and those consistently showing a hearing loss receive a special examination of the ear, nose and throat. They are not segregated from the public school classroom but lip reading is added to their curriculum and instruction given by trained teachers. After one or two years 76·4 per cent. showed definite classroom improvement and all showed marked improvement in behaviour.

The hard of hearing child in a majority of cases has a low intelligence because of lack of educational experience and not because of deficient mentality.

ANGUS A. CAMPBELL.

Vestibular (Bárány) Tests in the Diagnosis and Localization of Intracranial Lesions. GEORGE M. COATES, BENJAMIN H. SHUSTER and HERMAN B. SLOTKIN. (Philadelphia.) (*Jour. A.M.A.*, August 8th, 1936, cvii, 6.)

The authors base their studies on sixteen cases proven by operation or autopsy. The group comprised twelve brain tumours and

four abscesses. All the cases are reported in considerable detail. Of the tumour group three had unilateral deafness, six had vertigo, six had disturbances of gait, two had unilateral tinnitus and two bilateral tinnitus. Three had midline posterior fossa tumours involving the fourth ventricle, one a tumour of the left cerebellar hemisphere, three involved the cerebello-pontine angle, five had a tumour above the tentorium involving the olfactory groove, the temporo-parieto-occipital area, the temporo-parietal lobe, the fronto-parietal area and the suprasellar region, respectively.

In the four cases of brain abscess one involved the temporo-parietal lobe as well as the cerebellum, one the frontal lobe, and two the temporo-sphenoidal lobe.

The report emphasizes the usefulness of the vestibular examination as an aid in the diagnosis and localization of intracranial lesions, especially midline posterior fossa tumours. It illustrates the manner in which these tests may serve to confirm those obtained by other studies and how they may supply information which gives direction to otherwise conflicting observations.

With lesions in the cerebello-pontine angle the vestibular examination often makes possible the diagnosis before the appearance of general clinical phenomena and at a time when operation promises the best results. The consideration of angle lesions is of particular importance to the otologist since initial symptoms, as a rule, are deafness and tinnitus and the otologist is the first to be consulted.

ANGUS A. CAMPBELL.

Certain Auricular Manifestations of Tuberculosis. PROFESSOR PIETRO BRISOTTO. (*Bollettino delle Malattie dell'Orecchio, della Gola e del Naso*, July, 1936.)

Professor Brisotto records two cases of tuberculous disease of the mastoid process without any apparent lesion of the middle ear. The first was in a woman of 52. There had been severe pain in the left ear for two months, and this was worse at night and on movement of the head. The middle ear appeared normal but there was a slight sagging of the roof of the meatus. X-ray examination showed the left mastoid area to be more opaque than the right. The other ear, the upper respiratory tract and the lungs appeared normal. Operation showed a chronically infected mastoid process with an extradural abscess. The aditus was closed by sclerosis of the bone and mucosa. Granulation tissue from the mastoid was shown to be tuberculous. There was a family but not a personal history of tuberculosis.

The second case was in a woman of 20 years. She had a history of phthisis and had had a mastoid operation on the right side. She had had severe pain in the left ear for two months, which was

worse at night. The middle ear and meatus appeared normal. X-ray examination showed a comparative opacity of the mastoid process. After observation for some time the mastoid was opened and, after chiselling through dense sclerotic bone, an extradural abscess and granulation tissue were found. The granulation tissue proved to be tuberculous.

The author considers that both these mastoid processes were infected by blood-borne tuberculosis. In the first case there must have been an undiscovered primary focus, in the second there was an old pulmonary lesion and infected tracheo-bronchial glands.

F. C. ORMEROD.

Tuberculosis of the Middle Ear. N. RH. BLEGVAD. (Copenhagen.) (*Acta Oto-Laryngologica*, 1936, xxiv, 1.)

The diagnosis of tuberculosis of the middle ear is regarded as very difficult and thought to be impossible in the early stage. The author, on the other hand, finds it difficult in advanced cases but very easy in the early stage because of the constant and typical appearance of the drumhead described by Jørgen Møller in 1911. It is seen in adults with phthisis as well as in children with bronchial gland tuberculosis.

The first sign is dilatation of vessels which is unlike the diffuse congestion of acute otitis. The dilatation affects only a few vessels, a picture which may remain the same for many months.

Later on the drumhead swells without change of colour, then a fullness appears, first in the posterior and then in the anterior part, but only when the fullness becomes marked does the natural colour give place to a yellowish appearance.

The next stage is that of secretion. The epidermis bursts so that the surface resembles "slush ice". A watery secretion appears which comes apparently from the surface of the drumhead and then perforations follow (two or, more rarely, three) which may then run together so that the whole membrane is lost, but so long as a part of it remains, the dilated vessels persist and a diagnosis continues to be possible on the appearance of the drumhead.

The writer has confirmed his diagnosis in some cases by microscopy of pieces of tissue taken from the middle ear, miliary tubercles being found, but the text book description of miliary tubercles on the drumhead was rarely seen.

Symptoms are often absent, in the other cases deafness and a feeling of fullness and, in some, tinnitus is complained of. Rarely is there any pain except occasionally in mixed infection. If the middle ear is auscultated during catheterization the sound suggests an absence of secretion. The writer believes the infection to be blood-borne. Arc lamp or quartz lamp baths to the whole body are recommended for treatment.

Abstracts

As regards prognosis; of 119 patients treated since 1916 at least forty-eight are dead. The hearing is always bad and, in cases that recover, relatively bad, but there are some cases in which normal hearing returns. Complications are relatively rare. Once a tuberculous mastoiditis with post-aural swelling, in a child too ill for operation, was observed to clear up.

Paracentesis must be avoided, its practice might only lead to mixed infection and treatment with the Eustachian catheter is superfluous. The article is illustrated by two coloured pictures of the drumhead.

H. V. FORSTER.

Tuberculosis and the Organ of Hearing. E. URBANTSCHITSCH. (*Monatsschrift für Ohrenheilkunde*, 1936, lxx, 1287.)

Disfigurement of the lobe of the ear from lupus was observed in the pre-War period only in females, and could be cured by operation followed by Finsen light irradiation. Since the War, similar cases have not been seen, presumably partly as the result of a decline in the fashion for ear-rings, partly from earlier treatment, and partly from progress in light therapy.

In cases of suppurative mastoiditis with histologically proven tuberculosis of the mastoid process, there was a discrepancy between the subjective and objective course of the disease (e.g. good general condition with great destruction of bone). Excessive granulation formation, negative bacteriological findings and, in general, a tendency to healing were frequently observed.

Clinically primary tuberculosis of the middle ear is observed only at the extremes of the age scale. Besides excessive granulation formation, extensive bone destruction and facial palsy often occur. The prognosis in this case is very unfavourable.

The appearance of a miliary tuberculosis after an operation on a tubercular subject is, needless to say, fatal. Such a termination is however, rare.

A non-tubercular mastoiditis may supervene on a severe rapidly developing general tuberculosis. In a few cases deafness and dumbness is due to tuberculosis.

DEREK BROWN KELLY.

The Resistance of the Petrous Bone to the Development of Experimental Tuberculosis. PROFESSOR ESPEDITO DI LAURA. (*Bollettino delle Malattie dell'Orecchio, della Gola e del Naso*, April, 1936.)

In view of the interest in the condition of petrositis following purulent otitis media, the author has investigated the possibility of infecting the petrous bone with tubercle bacilli.

Suspensions of live bacilli were injected intraperitoneally in guinea-pigs, but in no case were any lesions ever found in the petrous

bone. Injections were next made in the carotid artery and in these cases deposits of tubercle bacilli were found in the petrous bone.

Finally suspensions of bacilli were injected through the tympanic membrane into the middle ear. In no case was any deposit of tubercle bacilli found in the petrous bone, nor did generalized tuberculosis arise from intratympanic injection. In one or two cases there were small nodules of tuberculosis in the spleen after injection.

F. C. ORMEROD.

The Ear in Tuberculosis. DR. G. G. BETTIN. (*Bollettino delle Mallattie dell'Orecchio, della Gola e del Naso*, May, 1936.)

Dr. Bettin has carried out a series of clinical, bacteriological, histological and radiological investigations on the ears of tuberculous patients. In 275 phthisical patients he found three cases of otitis media with tubercle bacilli in the discharge, seven without the bacilli but with typical tuberculous signs and progress, and four ears with multiple perforations. There was one case of histologically proved tuberculous otitis externa.

In addition to these there were twelve cases of purulent otitis media which were not demonstrably tuberculous in origin. Tuberculous otitis media occurred with equal frequency in men and women. Two-thirds of the cases occurred between the ages of 20 and 40, and there were rather more under 20 than over 40.

Radiological examination of the ears showed sclerotic changes in only two cases. Investigation of the patency of the Eustachian tubes in these cases showed that the great majority were free, only one or two being stenosed.

Practically every case showed a high degree of deafness.

F. C. ORMEROD.

Hæmorrhage following Paracentesis of the Tympanic Membrane. PROFESSOR FEDERICO FEDERICI. (*Archivio Italiano di Otologia*, March, 1936.)

Serious hæmorrhage following incision of the tympanic membrane is in most cases due to a direct wound of either the jugular bulb or the internal carotid artery, which project abnormally into the cavity of the middle ear, owing to a dehiscence of the roof of the jugular fossa or the posterior wall of the carotid canal.

The author has been able to trace eighteen cases in which the jugular bulb was injured but only one in which the carotid artery was involved. In the cases in which there were serious consequences to the accident these were not due to loss of blood but to the pyæmia resulting from the measures applied to control the hæmorrhage. Of three cases of pyæmia one was in a diabetic subject and in the other two the incision had been made by the cautery point.

Abstracts

The author has investigated 2,456 temporal bones in 1,228 skulls. In ten cases there was a dehiscence of the roof of the jugular fossa, large enough to have made wounding of the sinus a possibility in nine skulls. This represents a rate of four in one thousand. In one case, that is in 0·4 per thousand, there was a dehiscence in the posterior wall of the carotid canal. In six cases, 2·6 per thousand, there was a dehiscence in the wall of the aqueduct of Fallopius.

The dehiscence of the jugular fossa is ascribed to the exaggerated erosion of the sinus itself on the bullous system of the temporal bone, which is represented in the lower animals by the os entoticum of Wincza, and in the human embryo by a separate centre between the tympanic ring and the periotic capsule.

F. C. ORMEROD.

A Pathological and Clinical Study of Acute Mastoiditis. F. ALTMAN. (*Monatsschrift für Ohrenheilkunde*, 1936, lxx, 1465.)

In a long paper the author analyses and classifies a large series of acute mastoid cases. Various tables show the relative frequency of streptococcal, mucosus and pneumococcal infections and the incidence of complications in these varieties of mastoid disease. The influence of age, sex and the anatomical structure of the temporal bone on the course of the infection is fully discussed.

Attention is drawn to the difficulty in explaining why in streptococcal infections 98 per cent. of the cases ran an essentially similar course, whereas a typical "mucocus" course was seen in only 58 per cent. of cases due to that organism. The remainder behaved like streptococcal infections. Disease due to the pneumococcus ran a course similar to a "mucocus" infection in 26 per cent. of cases and a streptococcal-like course in 75 per cent.

After close study of the factors concerned, the author cannot find a solution for these phenomena, when the varying anatomical conditions in each temporal bone are considered.

DEREK BROWN KELLY.

Nerve Deafness due to Disturbance of Internal Secretion. E. ALFÖLDY. (*Monatsschrift für Ohrenheilkunde*, 1936, lxx, 1281.)

The author considers that presbyacusis and the other hypoæsthesias of age are due to a disturbance of the glands of internal secretion, especially the sex glands. He endeavours to restore the disturbed hormone balance by administering extracts of sex hormones (testis, ovary and hypophysis). These are given intravenously to obtain the maximum effect. An increase in hearing power and improved general condition is often observed.

DEREK BROWN KELLY.

Nose and Accessory Sinuses

On Phlegmonous Erysipelas and Septicæmia following Mastoid Operations. E. ROENAU. (*Arch. Ohr-, u.s.w. Heilk.*, 1936, clxii, 214-30.)

Erysipelas spreading into the skin from a mastoid wound is a well-recognized complication with a comparatively good prognosis. Very rarely the erysipelas is further complicated by a deep-seated cellulitis and the author describes five such cases in the present article. In "phlegmonous erysipelas", œdema often precedes the characteristic reddening of the skin. There is a hard infiltration of the deeper tissues and the sharp red border of the ordinary type of erysipelas is not seen. Presumably, the streptococcal infection has the characteristics of a deep-seated cellulitis from the beginning. The swelling affects the skin of the face, it rapidly spreads into the neck region and also deeply as far as the pharyngeal mucosa. Œdema of the soft palate, of the posterior pillar, and of the sinus pyriformis have been observed in some cases. The patients, often young and vigorous individuals, become desperately ill, with signs of generalized sepsis, and they usually die.

J. A. KEEN.

NOSE AND ACCESSORY SINUSES

The association of Filtrable Virus and Bacteria in the production of Experimental Sinusitis. C. S. LINTON. (St. Louis.) (*Annals of O.R.L.*, xliv, 948, 1935.)

Previous attempts to produce experimental sinusitis in animals have been almost uniformly unsuccessful, and an attempt was here made to overcome some of these difficulties, the rabbit being used for the experiments.

Since a virus seemed to be involved in the beginning of a high percentage of human sinus infections its use in the experimental production of the disease was suggested. The virus selected was that used in vaccination for smallpox and the bacterium associated hæmolytic staphylococcus aureus. The virus-staphylococcus mixture was injected into one maxillary antrum, and sterile saline into the sinus of the other side by way of control. A further series of animals was injected with a mixture of virus-staphylococcus and testicular extract, as it had been shown by Duran-Reynolds in 1929, and others, that this extract would intensify the virulence of a bacterial suspension. Eleven animals were injected with this latter suspension, and these all developed clinical sinusitis, and all but two had an empyema of the sinus at autopsy.

Animals in which virus-bacteria mixture alone was used showed clinical sinusitis in 59 per cent. with an empyema demonstrable at autopsy in 41 per cent.

Abstracts

Is Sinus Trouble being overstressed? A critical survey of the Sinus Problem. EMANUEL KRIMSKY. (*Laryngoscope*, 46, xlvi., 1936.)

The study of the relationship of sinusitis to systemic and other disorders of the body, has been confused by the elastic term " sinus trouble " which is loosely employed to include not only sinusitis, but also all types and degrees of nasal infection.

It is too often a cloak to explain away obscure headaches, eye complaints and mental changes. In particular the rôle of the sinus as a focus of infection requires most careful scrutiny. The evidence in favour of the sinus being an active focus is frequently insufficient to warrant the undue stress laid upon it by some authorities. A great many operations, which have been performed with a view to eradicating foci, have not had the beneficial effects hoped for in chronic arthritis, hypertension, chronic nephritis, ocular inflammations, etc.

It is generally accepted that retrobulbar neuritis occurs but rarely as a result of sinus disease.

There is marked discrepancy in the reports on the incidence of sinus disease in relation to mental disorders.

The relationship of sinusitis to such infections as pneumonia, meningitis, erysipelas, pulmonary tuberculosis and bronchiectasis is obscure. While some authorities consider the sinusitis as primary, it can equally well be reasoned that a debilitating disease may lead to infection of the sinuses.

Allergy has confused the sinus problem, and the cases of asthma or hay fever relieved by surgery are very few.

If chronic sinus suppuration were a factor responsible for sinus cancer, we should expect more malignancy.

The results of nasal surgery in children have not been particularly gratifying. The medical management of such cases, with attention to diet, allergy, fresh air, etc. appears to be far superior.

A plea is made to discourage surgery unless the indications are absolutely definite, as the trauma necessarily resulting from an operation may lead to an aggravation of a latent or healed sinusitis. Surgery appears to be not infrequently complicated by real dangers such as post-operative meningitis and osteomyelitis, with their extremely bad prognosis.

MYLES L. FORMBY.

Infections of the Nose from Vaccine Pustules. H. WEINHOLD. (*Arch. Ohr-, u.s.w. Heilk.*, 1936, clxii, 208-13.)

The author describes two cases of infection of the nasal vestibule in which the diagnosis was specially difficult and could be made only after a careful consideration of the clinical history. The patients were women, the condition developed rapidly, resembling herpes, acute eczema or, perhaps, the more chronic forms of

erysipelas. There was some ulceration in the nasal vestibule, crusting, and considerable swelling of the nose and upper lip.

The acute inflammation and all the symptoms subsided after about eight days. Both the author's patients were in contact with infants who had been successfully vaccinated some twenty days beforehand. One patient was nursing her own child, the other was in charge of a grandchild. The vaccine pustules in the infants were discharging freely and the patients had clearly infected themselves either by finger contact or by using a dirty handkerchief. Considering the severity of the inflammatory process the cervical glands showed very little swelling. The vaccination and re-vaccination which adults have usually undergone have produced a certain degree of immunity.

J. A. KEEN.

Osteomyelitis of the Frontal Bone. H. P. MOSHER. (Boston.) (*Journ. A.M.A.*, September 19th, 1936, cvii, 12.)

Reviewing all the cases at the Boston Eye and Ear Infirmary, especially those of the past five years, it was noted that the operative results have been progressively better and better in direct proportion as the operations performed were systematic and radical. Three illustrative cases are reported in considerable detail.

Œdema of the skin of the forehead is a rough guide to the extent of the bone and periosteal infection. If there is actual bone necrosis the bone is infected without necrosis for over an inch beyond the necrotic area. Bone necrosis does not occur until the seventh or tenth day after the pitting œdema appears and the X-ray is not positive until there is necrosis. The writer prefers a vertical, central incision meeting a horizontal incision above each eyebrow. The bone flap should extend laterally far enough to reach the outer limit of the frontal sinus and at least encroach on the anterior limit of the temporal fossa. Marking out of the bone flap by trephine holes made by an electric burr is the quickest and best method. All diagnostic trephine openings should be carried through both tables of the skull to the dura. The whole face of the frontal bone should be removed as a routine measure from the hair-line to the eyebrow and preferably in one piece. Both frontal sinuses should be opened and the anterior and posterior wall of each sinus removed. Extra- and intra-dural abscesses are so common that the surgeon should look for them.

Most of the deformity can be corrected by plastic surgery, but it is not considered wise to do this under three months.

Histological examination shows that the infection spreads by way of direct extension, thrombo-phlebitis, an inner layer of new bone which is formed between the skull and dura, and by way of the fibrous tissue which covers the new bone.

Abstracts

Bacteriophage was used with some success, especially in cleaning up dirty wounds.

The article is illustrated and has a bibliography.

ANGUS A. CAMPBELL.

TONSIL AND PHARYNX

Case of Naso-Pharyngeal Fibroma. RICHARD FLYNN. (*Australian and New Zealand Journal of Surgery*, October, 1936, 179.)

The patient, a boy of 12, sought medical attention on account of blockage of the left nostril, facial deformity, and loss of vision in the left eye.

On examination a large mass was seen protruding from and completely blocking the left nostril and a similar mass was seen in the naso-pharynx: this was found to be fixed to the posterior wall of the naso-pharynx. There was papillœdema of 5 dioptres in the left eye.

A piece was taken for section and showed the structure of a fibromyxoma.

The patient was operated on in two stages. At the first operation the internal carotid artery was tied and then a Moure's incision was made on the left side, the nose retracted and the anterior wall of the antrum, the frontal process of the maxilla and the nasal bone were removed, thus exposing the anterior surface of the tumour. A week later the wound was re-opened and the entire tumour mass removed.

Microscopic section showed the tumour to be a connective tissue growth showing fibrous and fibroblastic tissue with myxomatous degeneration.

The condition was regarded as a fibromyxo-sarcoma with the sarcomatous element not pronounced.

It is nine years since the operation and there is no sign of recurrence. W. A. MILL.

The Sore Throat in Early Syphilis. JOHN W. BRITTINGHAM. (Augusta, Georgia.) (*Annals of O.R.L.*, 1935, xliv, 990.)

Sore throat and tonsillitis in early syphilis are relatively common symptoms of this disease.

Subjective complaints of sore throat and objective evidence of tonsil disease were found in 28·8 per cent. of 803 patients with secondary and early syphilis.

One hundred and twenty-five out of 502, or 24·9 per cent. of patients with secondary syphilis had evidence of tonsil abnormality.

Routine serological tests for syphilis should be performed on all adult patients with sore throat of more than one week's duration, particularly if constitutional symptoms are absent.

[Author's Summary derived from the analysis of 1,226 cases.]

Miscellaneous

Case of Phlegmon of the Floor of the Mouth after Follicular Tonsillitis. H. BRUNNER. (*Monatsschrift für Ohrenheilkunde,* 1936, lxx, 1436.)

A detailed account is given of a case of follicular tonsillitis in which a necrotic purulent phlegmon developed in the left parapharyngeal space. The infection spread in a horseshoe fashion, with the convexity towards the spina mentalis, through the buccal floor. It ruptured spontaneously on the surface of the tongue in the neighbourhood of the right vallecula.

The course followed by the phlegmonous process is fully described and illustrated. Briefly, it was from one side of the mouth to the other along the transverse connective tissue space between the geniohyoids and genioglossi.

The patient died on the table from sudden cardiac failure while the infected area was being incised.

The article is illustrated by nine photographs of sections taken from various situations in the mouth and pharynx showing the course and development of the infection.

DEREK BROWN KELLY.

MISCELLANEOUS

Ocular manifestations of Rhinogenic and Otogenic Intracranial Complications. EDMUND B. SPAETH. (*The Laryngoscope,* xlvi, May, 1936, 323.)

A plea is made for the closer co-operation of otorhinologists and ophthalmologists in the diagnosis of rhinological and otitic intracranial complications, in an attempt to diminish the mortality.

A brief review of the part which sinuses may play in the development of these complications is given, from the maxillary antrum and frontal sinus, which are the least at fault, to the more important sphenoidal and ethmoidal sinuses. In contradistinction to the frontal sinus, it is during the acute stage of suppurative sinusitis in the ethmoidal labyrinth and the sphenoidal sinuses, that the meningeal complications occur, rather than during the chronic course of such infections.

An analysis follows of the complications following otitic infection. Meningitis is the most frequent, 50 per cent. of the cases, with thrombosis of the sigmoid sinus next in 30 per cent. and brain abscess in 20 per cent. of cases.

The presence of foul-smelling pus, cholesteatoma, necrotic bone in the middle ear, with a history of headache, mental apathy, slow respiration and subnormal temperature would lead one to suspect an intracranial extension of the infection—but the signs and symptoms *not* connected with the ophthalmic aspect of these cases are deliberately omitted.

Abstracts

The question of nystagmus is fully discussed, and the origins of the slow phase and the quick component are considered in detail with their application to the diagnosis of intracranial lesions.

A differentiation of the nystagmus which is labyrinthine, or central is important—for example cerebellar abscess is almost always accompanied by a nystagmus which is spontaneous and more or less accentuated, while the nystagmus of labyrinthine origin tends to decrease or disappear as the peripheral suppuration progresses. MacEwen Smith considers "that it (nystagmus) will assist in differentiating not only labyrinthine from cerebellar, but also from that due to cerebral or temporosphenoidal abscess."

The IIIrd Nerve, excluding cavernous sinus thrombosis is least commonly involved in intracranial abscess. It lies free in the pia and arachnoid spaces, as it passes out of the brain stem before it enters the cavernous sinus, and can only be paralysed by a massive exudate as in extensive meningitis. In neoplasms it is much more frequently involved, due to the mechanics of intracranial pressure.

IVth Nerve. An isolated paralysis is considered to be pathognomonic of cerebellar abscess, and probably not through cerebellar involvement so much as by pressure through the quadrigeminal plate.

Vth Nerve. Irritation causing pain is part of Gradenigo's syndrome. Pain occurring behind the eyes may be the first manifestation of congestion or caries of the petrous apex.

VIth Nerve. One of the most interesting of all possible motor paralyses and one of the most common signs of otitic intracranial extension. Four points of susceptibility are given :

1. In the bulbar cistern.
2. In the dural canal, at the sharp dural opening.
3. By a swelling of the periosteum of the apex of the petrous pyramid.
4. By an inflammation of the petrous sphenoidal ligament in Donello's canal.

Two forms of Gradenigo's syndrome are postulated—one benign and frequent, the other malignant and less common, but almost always fatal.

A simple cellulitis of the petrous bone, with meningeal congestion is responsible for the former. The presence of an osteitis of the anterosuperior petrous surface and at the tip an extradural abscess, or an intermeningeal abscess, is associated with the latter. The first requires free drainage of the tympanic cavity and the second operation on the petrous bone.

The presence of field changes, if carefully and frequently studied, can be of great importance in certain of these various complications, a characteristic feature being that they change rather often and may antedate other signs and symptoms of much more serious import.

Miscellaneous

Positive optic nerve papillary changes when present are a valuable sign, but if absent are not a guarantee of normality. 50 per cent. of cases with subtentorial complications will show a choked disc from intracranial pressure. It is seen in generalized œdema of the brain in association with brain abscess, lateral sinus thrombosis and temporosphenoidal lobe pathology, while abscess of the frontal lobe shows it rarely.

Ophthalmologically cavernous sinus involvement shows most symptoms. Frontal lobe abscess is notably poor in the presentation of any localizing signs or symptoms.

Neither the absence nor the presence of ophthalmological signs seems to be characteristic of intracranial extensions, and the author feels the ophthalmologist and the rhinologist will do well to work together.

MYLES L. FORMBY.

Roentgenotherapy of Epitheliomas of the Upper Air Passages. Dr. HENRI COUTARD. (*The Laryngoscope*, xlvi, June 1936, 407.)

A study of the cases of epitheliomas of the tonsil, pharynx and larynx at the Radium Institute, Paris, has shown that results of deep X-ray treatment are greatly influenced by certain characteristics of the tumour. These are described under the following headings :

Location.

The anatomical situation of the tumour is one of the most important factors. The best five year results were obtained in tumours of the tonsillar region (32 per cent. cases) the larynx came next with 25 per cent. and the least favourable were the hypopharynx (11 per cent.).

Metastatic Lymph Nodes.

Careful observation of the clinical characteristics of metastatic lymph nodes is important, as well as their location.

Nodes draining the sites of non-infiltrating epitheliomas are located in :

1. The posterior jugular chain from the nasopharynx, tonsils, lateral glossopharyngeal tissues, base of the tongue and upper part of the pyriform sinus.

2. The internal jugular chain—from the valleculae, lateral borders of the epiglottis and upper part of the pyriform sinus.

3. The anterior jugular chain—from the posterior part of the ventricular cavity and false cords.

4. The prelaryngeal nodes are most anterior, draining the false cords and anterior portions of the larynx. Nodes in these situations are usually large, soft, mobile, and situated at some distance from the primary growth and are radiosensitive.

Abstracts

Nodes draining sites of infiltrating differentiated epitheliomas, are on the contrary small, hard, indurated, and frequently situated close to, or in contact with the primary lesion. They are radio-resistant.

Such information may assist in predicting the radiosensitivity of the metastases and primary lesions, and may also help in locating hidden primary lesions, which may otherwise be missed.

Radiographically.

By this means the true extent of an epithelioma may be determined when indirect or direct laryngoscopy fails to do so. The method is of most help in ascertaining the anterior and lower limits of laryngeal growths.

Some observations on the technique of treatment follow with particular reference to the dosage and duration of treatment. No final evaluation of results is made, the number of cases studied being too small to warrant this.

MYLES L. FORMBY.

Disturbance of Vision following the injection of Adrenalin in Angio-fibroma of the Nasal Cavity. DR. JIRO KATO. (*Oto-Rhino-Laryngologia*, IX, 11, 1025.)

The patient was a woman, aged 29, who had suffered for a month from a tumour in the right nasal cavity, with epistaxis, nasal obstruction and migraine on the right side. X-rays showed a distinct opacity of the right side of the nose. After a radical operation on the antrum, removal of the tumour was undertaken but was not completed on account of violent bleeding. Histologically it was found to be an angio-fibroma, but deep Roentgeno-therapy carried out four times was ineffective. Several injections of adrenalin were made into the tumour with such good results that five days after the sixth injection the growth was removed entirely with a cold snare. There followed suddenly a high degree of weakness of vision from acute retrobulbar optic neuritis and thrombosis of the arteria centralis retinæ, while the field of vision on the lower central part was blind. No improvement took place in half a year. To account for the development of the thrombosis the author invokes Elschnig's back-flow theory.

JAMES DUNDAS-GRANT.

Cavernous Sinus Thrombosis of Tonsillar Origin with Recovery. A. JAUERNECK. (*Hals-, u.s.w. Arzt*, 1936, XXVII, 271-3.)

A woman, aged 34, developed signs of cavernous sinus thrombosis a few days after a tonsillar infection. The symptoms began on the left side with marked proptosis of the eyeball, swelling of the eyelids and conjunctiva, and tenderness on pressure. The

author diagnosed an ethmoid suppuration with an orbital extension. He opened the ethmoid labyrinth by an external incision and removed the ethmoid cells and the whole lamina papyracea. No pus was found in the ethmoid or orbit, the orbital fat bulging freely into the opening. The signs improved on the left side, but progressed on the right where the eyeball began to bulge forwards and to show marked œdema of the conjunctiva and of the eyelids.

In view of the favourable result on the left side, operation was performed to relieve tension in the right orbit. This time Dr. Jauerneck removed the floor of the orbit *viâ* the maxillary sinus. The patient ultimately recovered with permanent blindness in the left eye, but normal vision on the right side. The case is reported as a rare instance of recovery from cavernous sinus thrombosis which was well-established clinically. The author attributes the saving of the eyesight on the right side to the early relief of tension in the orbit afforded by operation.

J. A. KEEN.

Acute Laryngo-tracheo-bronchitis. CHEVALIER JACKSON and CHEVALIER L. JACKSON. (*Jour. A.M.A.*, September 19th, 1936, cvii, 12.)

Acute laryngo-tracheo-bronchitis is a distinct clinical type occurring most frequently and most severely during epidemics of so-called influenza. Over 90 per cent. of the cases are primarily or secondarily streptococcal and the mortality in children under three years is about 70 per cent. Bronchoscopically the outstanding feature observed is the bronchial obstruction from inspissated secretion which the weak or absent cough reflex is unable to expel.

An increased respiratory rate and an impaired percussion note usually means obstructive atelectasis and not pneumonia.

In the treatment of these cases the surrounding air should be saturated with moisture and in extreme cases the aspiration of secretions and the removal of crusts through a bronchoscope is often the only means of saving life. Atropine and opium derivatives should be carefully avoided.

The article is illustrated and has a bibliography.

ANGUS A. CAMPBELL.

Oral Complications of Chronic Alcoholism. M. A. BLANKENHORN and TOM D. SPIES. (Cincinnati.) (*Jour. A.M.A.*, August 29th, 1936, cvii, 9.)

Lesions of the tongue, lips, gums and palate occur frequently and are the forerunner of a serious condition known as alcoholic pellagra, which is probably a deficiency discase. The term stomatitis covers the condition generally. The mucous membranes become

deeply reddened, swollen, tender and here and there ulcers of a mild type develop. Vincent's organisms are easily demonstrated. In a series of over two hundred patients suffering from chronic alcoholic pellagra, 60 per cent. were found to have these lesions of the mouth and tongue.

Early treatments consisting of a nutritious diet, wheat germ, extracts of yeast and liver, result in marked improvement in from twenty-four to thirty-six hours and within a few days the tongue and mucous membranes have returned to their normal condition.

ANGUS A. CAMPBELL.

A Case of Diphtheritic Hemiplegia. J. M. TODESCO. (*Lancet*, 1937, ii, 84.)

The author describes this condition in a girl of nine. The points of interest in the case are the sudden onset of a flaccid hemiplegia in the third week of a severe attack of diphtheria, the rapid recovery of the use of the right leg and comparatively early recovery of the facial and right arm paralysis. MACLEOD YEARSLEY.

The Nose and Throat in Relation to the Rheumatic Diseases. H. BARWELL. (*Lancet*, 1937, i, 67.)

The author points out that acute rheumatism is caused by a streptococcal infection and refers to Dr. Coburn of New York, as suggesting that the rheumatic person responds to such infection in a peculiar way. The source of the infection is in the lymphoid tissue of the throat and its incidence is certainly diminished by tonsillectomy. Owing, however, to the numerous scattered nodules of lymphoid tissue in the pharynx, tonsillectomy is not certain in its prevention, although it makes recurrence less probable. In chronic rheumatism, the sources of infection may be *streptococcus hæmolyticus* or *viridans*, or *bacillus coli*, and may be found in the teeth, tonsils, nasal sinuses or in the abdomen. He has never met with it in the ear. The different methods of treating tonsils which are the subject of chronic infection are discussed, and the author gives it as his opinion that apart from tonsillectomy, diathermy coagulation is the most effective. This, however, demands much technical skill or serious harm may result.

MACLEOD YEARSLEY.

Introduction to the study of Tumours called Cylindromas. F. LEMÂITRE, G. ARDOIN and Y. LEMÂITRE. (*Acta Oto-Laryngologica*, 1936, xxiv, 1.)

The name cylindroma is given to a numerous variety of tumours which differ in their clinical development, the type of therapy required for their treatment, and in their prognosis. The term cylindroma ought to be given up. Tumours exist which are

histologically cylindromatous but which have few characteristics to suggest a common origin. In the first place there are undoubtedly malignant tumours, these are the cylindromatous epitheliomas but, on the other hand, there are relatively benign tumours, the cylindromatous epitheliomata of the skin.

The cylindromatous epitheliomas are glandular epitheliomas arising from seromucous glands, chiefly to be found in the upper digestive and respiratory tracts, the mouth, pharynx (above all the naso-pharynx), the larynx and trachea. They remain submucous for a long time, do not ulcerate, are slow growing, show very little lymphatic spread, and never form metastases. They call for surgical removal but often recur several months or years after operation, generally ending in death 7-8-10 years later after three or four operative interventions, their degree of radio-sensitivity has not yet been established.

The cylindromatous precancerous states are commoner than the former group and all their history is confused with that of the so-called mixed tumours of the salivary glands.

These precancerous tumours are found in order of frequence in the parotid region, the arches and velum of the palate, and in the submaxillary gland. Their development is slow and they have a good prognosis if completely removed but their cancerous transformation is far from being exceptional and in this way they differ from the classically so-called mixed tumours.

The cylindromatous epitheliomas of the skin. These resemble classical cutaneous epitheliomas especially the basal-celled variety. Clinically they offer a good prognosis to rational treatment, namely by total excision.

H. V. FORSTER.

On the Relationship between the Histological Malignancy and the Clinical Malignancy of Epithelioma of the Upper Respiratory and Food Passages. GEORGES PORTMANN, BARRAUD and MOUGNEAU. (Bordeaux.) (*Acta Oto-Laryngologica*, 1936, XXIV, 1.)

The histological examination of numerous malignant tumours in old people from the point of view of their epithelial tissue as well as their stroma does not explain the slow development of cancer in such cases. The tissues have the same microscopical signs of malignancy in the young as in the adult.

Certain of their preparations also appeared to assume a particular form of malignancy. The clinical evolution of epithelial cancers of the digestive and food passages in old people appears to be directed by factors not explained by histological examination.

The more the study of cancer advances the more we find the need to revise certain notions that have been too readily accepted.

Abstracts

The lack of relationships between the clinical malignancy of epitheliomas of the air and food passages in old people is an example of this. If, in certain cases of malignant epithelial tumours, it is not advisable to place too much value as to prognosis on information received from biopsy it seems we cannot expect to gain very reliable information to guide our therapy. Clinicians know well that it is not always epitheliomata classified by their known histology that fulfil expectations under radiotherapy. Surgery, on the other hand, maintains its supremacy because this practical idea is recognized.

[Translation of Authors' conclusions.]

Researches on the Active Substance of Grass Pollen. C. E. BENJAMINS (in collaboration with H. A. E. VAN DISHOECK and MLLE J. L. M. GERMAN. (Groningen.)). (*Acta Oto-Laryngologica*, 1936, XXIV, 1.)

In living Nature we find certain substances having in common two fundamental properties, namely, marked activity and a specific action even in minute quantities. Among such substances are hormones, enzymes and antigens. For a long time these substances were thought to be albumins but now it is recognized that they are composed of molecules much smaller than are found in albumins.

There does not appear to be agreement about the nature of the active substances of pollens, some experimenters believe them to be albumins, others that they are of small molecular structure.

The writer found that, after passing a pollen extract under pressure through a celloidin membrane (ultrafilter of the Membranfilter—Gesellschaft of Gottingen) or subjecting it to the action of proteolytic ferments, the resulting extract maintained its property to cause reaction in hypersensitive skins though to a lesser degree. The active substance, therefore, ought to be present in a free state in the original extract but, to develop its full activity, it would appear necessary for it to be bound to larger compound colloids. A series of hay fever subjects and also a group of controls submitted to the author's experiments. A number of different materials were used such as proteins, polysaccharides, aminoacids, etc. with which to mix the pollen ultrafiltrate after its threshold of reaction had been determined, with the result that reactions of greater intensity were obtained.

The sharpest reactions were obtained by mixing with colloidal albumin, to which substance alone the test case was not sensitive. This large molecular substance appears to protect the active pollen substance from the neutralizing action of the skin.

Other experiments were carried out by combining the ultrafiltrate with gelatine and then separating it once again by ultrafiltration.

The writer concludes that the active substance of pollen is not a protein but a small molecular substance. The article is illustrated by photographs and by a diagram showing how outlines of the extent of the reactions could be recorded and compared by tracings on denuded photographic film. H. V. FORSTER.

Thrombo-phlebitis of the Cavernous Sinus of Tonsillar origin. DOTT. E. TAVANI. (*Bollettino delle Malattie dell'Orecchio della Gola e del Naso*, October, 1936.)

Cavernous sinus thrombosis complicating tonsillar infection is uncommon. Dr. Tavani describes a case of a man of 30 who had suffered from an acute tonsillitis with much pain on swallowing and a moderate degree of fever. The fever had persisted for ten days after the local symptoms had subsided. Ten days later, that is three weeks from the onset of tonsillitis, he attended hospital with a definite exophthalmos, slight chemosis and congestion of the vessels in the fundus oculi. The movements of the eyeball were much reduced. The temperature was raised to 101-103° F. The cerebrospinal fluid was not under increased pressure but was turbid, with pus cells. It was, however, sterile in several different media. Queckenstedt's test was positive for the right side, negative for the left. The symptoms remained stationary for two weeks but then a left-sided hemiplegia occurred. From this point all symptoms increased, the general condition deteriorated, and death ensued three weeks from the first attendance at hospital.

A point of interest in this case is the slow progress of the disease, which is usually much more dramatic and fulminating. The infection from the tonsil to the cavernous sinus may follow one of several routes. It may reach the internal jugular vein by the pharyngeal veins and then by the posterior route passes by the inferior and superior petrosal sinuses to the cavernous sinus. On the other hand it may pass from the jugular vein by the anterior route, through the facial, angular and ophthalmic veins to the sinus. A third route is by the pterygoid plexus and the vein through the foramen ovale to the sinus.

In the case described, the right internal jugular vein was certainly thrombosed and it is probable that the infection passed by the posterior route, as there was never at any time swelling along the course of the anterior veins. That the proptosis preceded the chemosis suggests that the thrombosis was spreading anteriorly in the orbit. The left hemiplegia was probably due to the extension of the thrombosis to the superior longitudinal sinus and to the veins of the right Rolandic cortex.

The author states that an aseptic meningitis is not an uncommon complication of the cavernous sinus thrombosis.

F. C. ORMEROD.