

ABSTRACTS

EAR

The Course of Otitic Facial Palsy under Adequate Treatment of the Disease of the Ear. When is a Ballance-Duel Operation Indicated? KARSTEN KETTEL. *Acta Otolaryngologica*, July 1st-August 31st, 1946, Fasc. 4, xxxiv.

The author examined personally 169 cases of otitic facial palsy which were treated without surgery of the Fallopiian canal. This extensive follow-up showed that no case got *complete* recovery unless recovery had commenced within two months of the onset of the palsy. Many began recovery later and recovery was considerable, but it was never complete.

He therefore concludes that if complete recovery is important to the patient the nerve should be decompressed two months from the onset of the palsy unless recovery has already begun.

He found that the faradic response was not a reliable guide in distinguishing between anatomical and physiological damage to the nerve.

He lays down general rules for guidance :

Pre-operative palsy in acute otitis media requires simple mastoidectomy.

Pre-operative palsy in chronic otitis media requires radical mastoidectomy, and only if a fistula is discovered is a decompression performed.

Post-operative palsy noticed directly after operation indicates immediate decompression and, if required, repair of the nerve.

Post-operative palsy after a free interval should be treated conservatively.

In all cases where immediate operation is not indicated the nerve should be decompressed and examined if there is no recovery after two months.

G. H. BATEMAN.

The Question of the Etiology and Treatment of what is known as Rheumatic Facial Paralysis. ERIK BERGSTROM. *Acta Otolaryngologica*, November 1st-December 31st, 1946. Fasc. 6, xxxiv.

The etiology of Bell's palsy is discussed and an exceptionally interesting case is described. This patient had suffered from a Bell's palsy for fifteen years and after this time a partial paralysis became complete. After no improvement with a few months' treatment, decompression of the nerve was performed.

A narrowing of the bony facial canal was found extending from just outside the geniculate ganglion to just below the horizontal canal. The canal was widely opened and the nerve sheaf split. Complete recovery of the facial movement was observed seven months after operation.

It is thought that this is an unusual case of Bell's palsy but it provides an additional reason for surgical treatment of Bell's palsy which fails to recover spontaneously.

G. H. BATEMAN.

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On the Treatment of Apicitis Suppurativa. ANDERS THORVAL. *Acta Otolaryngologica*, November 1st-December 31st, 1946, Fasc. 6, xxxiv.

The author describes a case of apicitis suppurativa treated surgically by what he calls a modified Streit's operation. This consists of removing the bone at the root of the zygoma and exposing the dura for a width of about $2\frac{1}{2}$ cm. at the superior aspect of the petrous pyramid. The dura is carefully elevated until the apex of the petrous pyramid is reached. An abscess here can now be opened with a slightly curved chisel and punch forceps. In his case a drain was left in this abscess for five weeks. He regards this as a comparatively simple operation and thinks its disadvantages have been exaggerated by other writers.

The author appears to advocate limited clearance of the mastoid cells in certain cases of acute mastoiditis and things that careful curettage of the perilyabyrinthine cells is the cause of apicitis.

The reviewer entirely disagrees with this view and thinks that the comparative rarity of apicitis in present practice in this country is due to surgeons now realizing the importance of peri-labyrinthine cells and dealing with them at their operations. The reviewer also considers that in most cases of apicitis the cellular track from the mastoid to the apex can be found and curetted and that only in cases where this fails should the Streit's operation be considered.

G. H. BATEMAN.

Deafness, Tinnitus, Vertigo and Neuralgia. DAVID J. GOODFRIEND, D.D.S. (Philadelphia). *Arch. Otolaryng.*, 1947, xlvii, i, 1-34.

This work is devoted to the subject of abnormalities of dental bite that cause, predispose to and aggravate auditory disturbances and neuralgias. It presents the normal and the abnormal anatomic and physiologic relationships of the dental bite to the temporo-mandibular joint and of the latter to the external auditory meatus, the middle ear and the eustachian tube.

R. B. LUMSDEN.

Anæsthesia for the Surgical Correction of Deafness. S. G. HERSHEY, M.D., MARVIN F. JONES, M.D. (New York). *Arch. Otolaryng.*, 1947, xlvii, 390-394.

The surgical and anæsthetic problems involved in the fenestration operation are outlined and an anæsthetic regimen, preliminary in nature, is presented in relation to these problems. It is important to develop anæsthetic care for this new operation according to current concepts of clinical anæsthesia.

R. B. LUMSDEN.

Deafness of Central Origin with Musical Paracusis after Wound of the Occiput. G. ARNOLD (Vienna). *Monatsschrift für Ohrenheilkunde*, October, 1946, x, 462.

A full case report is given of an intelligent, right-handed male aged 28, who sustained a shrapnel wound of the occiput. For several days he was completely blind and deaf. The sight returned, but he could only with difficulty recognize and describe pictures of objects. The relationship of objects one to the other was not appreciated. No peripheral ocular lesion could be found to explain the diminished visual fields.

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Some hearing also returned, but there remained a severe deafness of central origin, more marked on the left. The drumheads were normal, and the vestibular apparatus unaffected. Upper and lower tone limits were considerably curtailed, but understanding for speech and whisper was worse than what was expected after the tuning fork tests.

Marked subjective symptoms included bilateral tinnitus at C5 pitch, sensation of over-tones with over-tone free tuning forks, impression of continuation of note after removal of tuning fork, and painful sensation on listening to any music but the simplest unharmonized melody. A piano sounded unbearably out of tune, and music seemed distorted and full of interference. With one ear alone (either side) music sounded far better. There was no gross abnormality of the general nervous system.

DEREK BROWN KELLY.

Cerebrospinal Fluid Fistula of the Internal Auditory Meatus with Spontaneous Pneumo-encephalon. W. HAARDT (St. Pölten). *Monatsschrift für Ohrenheilkunde*, 1947, lxxxii, 392.

A 63 year old man with a left chronic suppurative otitis media was admitted to hospital on account of an acute exacerbation with rigors and left facial palsy. The left ear was completely deaf, and the labyrinth dead. Lumbar puncture showed a turbid fluid under normal pressure.

At operation, cholesteatoma with pus under pressure was found. As the facial nerve had been largely destroyed, a considerable portion of the labyrinth was removed and the internal auditory meatus opened. This was followed by an improvement in the patient's condition, until the fifth day, when the flow of C.S.F. stopped and fever and headache returned.

While dressing the wound on the sixth day, there occurred a temporary flow of fluid. Small air bubbles were noticed at the opening into the internal auditory meatus. These moved in and out with the pulse, finally disappearing into the opening on diastole. Radiograms revealed a pneumo-encephalon with air in the anterior horns and in the subarachnoid space in the parietal region. At the next dressing, by turning the head to the right and lowering it as far as possible, air could be made to escape from the wound. Further pictures on the eighth day showed air in the posterior horns and in the third ventricle.

The patient became worse despite ventricle puncture (fluid and air released) and administration of penicillin. Death took place twenty days after the operation.

Post-mortem examination revealed that there was no meningitis. The brain was slightly atrophic. The lateral ventricles were opened by a horizontal cut under water, releasing several large air bubbles.

DEREK BROWN KELLY.

Penicillin in Infections Involving the Central Nervous System and Skull.

H. C. NAFFZIGER, M.D., HELEN WARMER, A.B., WALTER E. STERN, M.D., ROBERTA FENLON, M.D., and H. J. McCORKLE, M.D. (San Francisco). *Jour. A.M.A.*, August 10th, 1946, cxxxii, 1, 183.

During the past two years the writers have treated with penicillin 37 patients who had infections involving the skull and central nervous system. Of a group

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of twelve patients with pneumococcal meningitis, nine recovered. The cerebrospinal fluid cultures of all patients who survived were sterile after 24 to 72 hours of combined systemic and intrathecal treatment with penicillin. Two patients with streptococcal and one with staphylococcal meningitis recovered although one of the former was left with a severe mental impairment.

In the treatment of eight patients with osteomyelitis of the frontal bone the immediate results were good but recurrences took place in all cases unless radical surgical excision of the infected areas was carried out as well.

In early acute infections originating in the middle ear, the results of penicillin therapy alone were good but well established acute or chronic infections of mastoid origin usually require surgical procedures in addition.

ANGUS A. CAMPBELL.

The Use of Residual Hearing. A. C. FURSTENBERG, M.D., Ann Arbor, (Michigan). *Jour. A.M.A.*, September 21st, 1946, cxxxii, 138.

None of the present plans for the prevention of deafness is ideal. The point where prevention terminates and therapeutic procedures begin must be clearly discerned. In children a mass of adenoids encroaching on the eustachian tubes is an important ætiological factor. After the removal of adenoids, radiant energy may be useful in the destruction of lymphoid tissue responsible for the occlusion of the eustachian tubes.

Otosclerosis is a pathological and clinical entity which has successfully concealed its ætiology and has resisted all forms of medical treatment. The fenestration operation stands as the only therapeutic measure which has been of any service to patients with this disease.

In patients with chronic progressive deafness, it is futile to operate on their noses, remove their tonsils or inflate their eustachian tubes, but they should be given a true story of their affliction. They require the combined available talents of the otologist, psychologist, psychiatrist, physicist, acoustic engineer and speech expert.

For patients unable to hear ordinary conversational voice, a hearing aid should be recommended regardless of the curve expressed by the audiometer. In most instances it will be found that the air conduction instrument with a well fitting ear piece is the one of choice.

The power to interpret sounds conveyed through a hearing aid often takes months of diligent effort on the part of the patient. He cannot adjust himself to one of these instruments in two or three days. He must learn a new language. The hearing aid should be adjusted to the good ear, worn all the time and the patient trained to interpret only those sounds that are transmitted through the instrument.

ANGUS A. CAMPBELL.

NOSE

Packing for Nasal Bleeding. KARL MUSSER HOUSER, M.D. (Philadelphia). *Jour. A.M.A.*, September 21st, 1946, cxxxii, 144.

In spontaneous nasal hæmorrhage or in severe bleeding following nasal surgery the writer uses $\frac{1}{2}$ inch oxidized cellulose gauze packing. It is inserted

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in sufficient quantity and with sufficient pressure to control the bleeding but removal is unnecessary. In about 48 hours it becomes a jelly-like mass and comes away without instrumentation. It does not become foul-smelling like ordinary gauze packing. It may be used with a post nasal pack.

ANGUS A. CAMPBELL.

LARYNX

Surgery of the Larynx in Bilateral Abductor Paralysis. JOSEPH D. KELLY, M.D. (New York). *Jour. A.M.A.*, July 12th, 1947, cxxxiv, 2, 944.

The great obstacle in the intralaryngeal route for the correction of this defect has been the formation of scar tissue. The extralaryngeal route offers an escape from these failures. The arytenoid cartilage is still the keystone in success or failure of this operation. In thyroidectomized patients it is difficult or almost impossible to identify the anterior belly of the omohyoid muscle as advised by the King technique.

The author has devised a procedure described as arytenoidectomy in which a direct approach is made to the arytenoid cartilage through a window made in the thyroid cartilage. The arytenoid cartilage is removed and some of the muscle tissue of arytenoideus or thyroarytenoideus may be removed if more separation of the cords is desired. This procedure has given a good percentage of successful results.

ANGUS A. CAMPBELL.

MISCELLANEOUS

Treatment of Cancer of the Face, Mouth and Neck with Irradiation.

CHARLES L. MARTIN, M.D., and CARLETON WRIGHT, M.D. (Dallas, Texas). *Jour. A.M.A.*, July 5th, 1947, cxxxiv, 10, 861.

The high incidence of cancer in these areas in the Southern States is thought to result from constant exposure to sunshine and hot winds. In this clinic all the lesions under consideration are primarily treated with irradiation and electro-surgical methods. Epidermoid carcinomas of the skin and lip which measure less than two cm. in diameter and which show little or no infiltration are treated with superficial roentgen therapy. When the tumour is elevated well above the surface, the presenting portion is removed by electro-surgical intervention before roentgen therapy is started. This procedure renders extremely large doses of irradiation unnecessary. A rather severe reaction appears about seven days after treatment and the treated area is often denuded. All evidence of the tumour disappears during the period of reaction and healing takes place in from six to eight weeks. An all out effort to produce a cure with the first series of treatments should be made. Second attempts are never very effective and may be harmful.

Interstitial radium technique is preferred for all lesions in the mouth. Rounded tumours are treated by inserting the needles in two or more theoretical layers, one above the other. No radon implants are used at the present time.

The local application of boracic ointment to the skin and an alkaline lotion for the mouth lesions is helpful. Superficial sloughs on the cutaneous surfaces respond well to cod liver oil ointment.

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Large doses of irradiation applied to the ear or nose may produce an extremely painful chondritis. This discomfort is promptly relieved by removal of the cartilage.

When small malignant nodules persist or small recurrences are observed later in heavily irradiated areas, it is better to remove them by electro-surgical means.

Small superficial carcinomas of the nose do well with surface irradiation. When deep invasion has occurred, the entire nose is removed with cutting current and Coutard technique applied to the entire nasal passage. An artificial nose, attached to a pair of glasses, hides the defect.

Small lesions confined to the skin of the ear, respond well to superficial irradiation but if large portions are involved the overlying portion of the auricle is removed and radium needles are inserted. No advanced cancer of the ear responds well without the removal of the overlying cartilage. Invasion of the auditory canal is handled by stitching small radium needles into the wall of the passage.

When the mouth is involved it is desirable to remove all teeth in the vicinity and allow the gums to heal before irradiation is started. Primary lesions of the anterior pillar and soft palate are always flat and easily implanted. The insertion of needles into the base of the hard palate presents a real problem.

Cervical nodes containing squamous cell carcinomas cannot be cured by external irradiation alone. A combination of interstitial and external irradiation offers a better chance of cure.

Palliation is well worth while and some type of therapy should be given to every patient.

The article is fully illustrated, has four tables and a bibliography.

ANGUS A. CAMPBELL.

Effect of Various solutions of Penicillin sodium and Penicillin calcium on the Respiratory Nasal Mucosa of Rabbits. NOAH D. FABRICANT, M.D. (Chicago), A. R. HOLLENDER, M.D. (Miami Beach, Florida), HAROLD W. ANDERSON, M.D. (Chicago). *Arch. Otolaryng.*, 1947, xlvii, 1, 36-39.

Animal studies have demonstrated that various solutions of sodium and calcium penicillin (containing from 1,000 to 5,000 units per cubic centimetre) when applied topically to the respiratory nasal mucosa of rabbits every day for thirty to ninety days have an apparently innocuous effect on nasal tissues. It seems that penicillin solutions suitable for topical application in the treatment of nasal and sinus infections are compatible with ciliary activity, have a slightly acid pH value approximating that of normal nasal secretions, are isotonic and are non-injurious and non-toxic.

R. B. LUMSDEN.

On the Leucocytic Blood Picture and Sedimentation Rate and their Value in Orogenous Endocranial Complications. H. HOHLBRUGGER (Innsbruck). *Monatsschrift für Ohrenheilkunde*, 1947, lxxxii, 440.

Examination of white cells and sedimentation rate were carried out in 192 acute, and 31 chronic cases of middle-ear disease, with the undernoted conclusions.

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1. The sedimentation rate alone is of little diagnostic value. Its acceleration is simply indicative of the existence and extension of an inflammatory process.

2. Repeated estimations are required. Increase in the rate may precede fever and other symptoms in mastoiditis, cerebral abscess and other complications.

3. The sedimentation rate is mainly of value when taken in conjunction with the examination of white cells.

4. An accelerated rate and rising curve in the third or fourth week of an acute otitis is indicative of mastoid disease.

5. In meningitis, the S.R. can suggest the advisability of lumbar puncture in the early stages, especially when the symptoms are masked by sulphonamides. Blood picture and S.R. can show whether the meningitis is serous, purulent, progressing or improving.

6. Serous inflammatory conditions affect the S.R. less than the corresponding purulent affections. A low S.R. in Gradenigo's syndrome suggests a local circulatory disturbance of toxic origin.

7. S.R. and white cell counts are of special value in a symptomless, insidious acute otitis. They may be the only indication of mastoiditis or encapsulated brain abscess developing in a mucosus otitis or sulpha-treated patient.

8. In chronic suppurative otitis media there is no increase in S.R. unless there is retention of pus. Accelerated rate raises suspicion of extension of the disease to the endocranium.

9. S.R. and white cell count are useful indicators of post-operative progress. Increase in S.R. suggests intracranial spread provided intercurrent illnesses can be excluded.

10. Repeated estimation of S.R. and W.B.C. can indicate the necessity of operation in sinus thrombosis by distinguishing between a clot which is septic, and one which is part of a healing process.

11. Encapsulated abscesses (brain, mastoid, or petrous apex) accelerate the S.R. only slightly compared with unencapsulated abscesses.

12. Estimation of S.R. and W.B.C., should therefore be considered as necessary as the taking of pulse rate, temperature, and examination of urine.

DEREK BROWN KELLY.

Melkersson's Syndrome. Report of Five Cases, with Special Reference to the Pathological Observations. K. KETTEL, M.D. (Hillerod, Denmark). *Arch. Otolaryng.*, 1947, xlvii, 341-360.

Melkersson's syndrome is a characteristic facies morbi comprising the following triad: chronic swelling of the face, peripheral facial palsy, which may be bilateral and which may tend to relapse, and lingua plicata. As a rule, the disease begins in childhood or youth with an attack of peripheral facial palsy, which may be bilateral and possibly may relapse; either simultaneously or later (sometimes not until several years later), a swelling of the face occurs, especially localized to the lips. The tongue is distinctly furrowed (lingua plicata).

Both clinically and pathologico-anatomically the facial palsy shows close correspondence to Bell's palsy. Two of the patients with bilateral palsy were operated on after the method of Ballance and Duel (decompression of the facial

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nerve), and while in the first patient nothing macroscopically abnormal could be demonstrated in the bone or the nerve on one side, extensive changes both of the mastoid process and the facial nerve were found on the other side. In the other patient there were no abnormal macroscopic findings in the cells of the mastoid process, the canal of the facial nerve or the nerve.

Much seems to indicate that the palsy is due to a disturbance of the regulation of the vasa nervorum of the facial nerve.

During the chronic stage the swelling of the face is due to chronic œdema, which has all the characteristic features of angioneurotic œdema.

The facial palsy and the swelling of the face occur within the parts innervated by a particular nerve, the facial nerve, for which reason it is supposed that in these patients this nerve, besides supplying the voluntary facial muscles with motor fibres, also conducts vasomotor fibres. Decreased function of the former results in facial palsy, whereas disturbance of the innervation of the latter causes neurotrophic facial œdema.

The treatment consists in excision of superfluous tissue preceded, if required, by an injection of boiling water into the swollen tissue, plus radium treatment (New and Kirch).

If after two months' observation the facial palsy has not displayed signs of beginning spontaneous regeneration, or if the spontaneous regeneration has come to a stand still before complete restitution has been obtained, or if the palsy relapses, decompression of the facial nerve according to the Ballance-Duel method must be done. (17 references are given.) R.B.L.

Hemophilus Influenzae Meningitis Treated with Streptomycin.

HATTIE E. ALEXANDER, M.D., GRACE LEIDY, (New York),
GEOFFREY RAKE, M.B. and RICHARD DONOVICK, PH.D. (New
Brunswick, N.J.). *Jour. A.M.A.*, October 26th, 1946, cxxxii, 434.

Twenty-five patients with influenzal meningitis were treated with streptomycin alone or with other agents. No evidence of permanent kidney damage was noted.

It is clear that streptomycin therapy alone brings about complete recovery when the meningitis is of average severity but when the infection is severe, streptomycin is limited in its ability to cure the patient. In the severe infections the writers feel that therapeutic failure will be reduced to a minimum by the initial use of three agents, i.e., rabbit serum, sulfadiazine and streptomycin.

The article has 5 charts, 7 tables and a bibliography.

ANGUS A. CAMPBELL.

Streptomycin in the Treatment of Infections. A Report of One Thousand Cases by the Committee on Chemotherapeutic and other Agents, National Research Council. *Jour. A.M.A.*, September 7th, 1946, cxxxii, 4.

The committee directed the investigation toward those infections that were most likely to be benefited by the drug and to those that were resistant to penicillin and the sulphonamides. Streptomycin is dispensed either as a sulphate or a hydrochloride, both of which are extremely soluble. The total volume injected should be kept as small as possible and the site of the injection changed each time.

The intramuscular route is the one of choice but subcutaneous, topical or

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intrathecal routes may be used. In meningitis, intermittent intramuscular and intrathecal injections are necessary. There are no advantages in giving it intravenously. Oral administration is useless in systemic infections and if the drug be nebulized in bronchial infection, very little streptomycin is absorbed through the lungs.

There were a hundred cases of *Hæmophilus influenzae* meningitis reported, of these 66 were cured clinically and bacteriologically while under treatment, 13 improved under treatment and finally recovered, one improved but relapsed, 3 showed no effect and 17 died. Late treatment after other forms of therapy have failed is most unfavourable.

Streptomycin is extremely effective in tularæmia but has little or no effect on typhoid.

Results are striking in infections of the middle ear caused by Gram-negative organisms. It was used prophylactically with satisfactory results in 3 cases.

The article is lengthy, has eight tables and bibliography.

ANGUS A. CAMPBELL.

Development of Streptomycin Resistance During Treatment. MAXWELL FINLAND, M.D., RODERICK MURRAY, M.D., H. WILLIAM HARRIS, M.D., LAWRENCE KILHAM, M.D. and MANSON MEADS, M.D. With the technical assistance of CLARE WILCOX (Boston). *Jour. A.M.A.*, September 7th, 1946. cxxxii, 16.

The early laboratory and clinical experiences with streptomycin have already indicated that acquired resistance may be of considerably greater importance with this agent than with penicillin or the sulphonamides.

Of twelve cases with various Gram-negative bacilli treated with streptomycin, eight failed to show any beneficial effects. The failure in each instance was associated with a rapid development of extreme resistance to streptomycin.

ANGUS A. CAMPBELL.

Streptomycin. Its Clinical Uses and Limitations. DONALD R. NICHOLS, M.D. and WALLACE E. HERRELL, M.D. (Rochester, Minn.). *Jour. A.M.A.*, September 28th, 1946, cxxxii, 200.

Streptomycin has been found to be active in vitro to a variety of Gram-negative and Gram-positive bacteria. Various strains of the same bacterial species may differ widely in their sensitivity to streptomycin.

Oral administration is of little or no value in systemic disease.

Intramuscular administration is the method of choice but the drug may be given intravenously, subcutaneously and intrathecally. Streptomycin introduced into the tracheo-bronchial tree by nebulization is not absorbed into the blood stream in significant amounts. It is of definite value in the preparation for pulmonary resection in cases of bronchiectasis. Further investigation into the treatment of non-surgical bronchiectasis appears to be indicated. Streptomycin does not exert a rapidly curative effect on clinical tuberculosis. *Hæmophilus influenzae* and tularæmia respond satisfactorily to treatment with this drug.

Temporary symptomatic improvement occurs in the treatment of ozæna. Best results are obtained when the organism is *proteus vulgaris* or *aerobacter aerogenes*.

Meningitis due to *hæmophilus influenzae* responds satisfactorily.

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Streptomycin is of doubtful value in osteomyelitis.

The elimination of the organisms sensitive to streptomycin frequently may favour the growth of bacteria which are sensitive to penicillin. There is no contra-indication to the simultaneous use of both streptomycin and penicillin.

ANGUS A. CAMPBELL.

Thrombosis of the Cavernous Sinus. SAMUEL L. FOX, M.D. and G. BROOKS WEST (Junior), M.D. (Baltimore). *Jour. A.M.A.*, August 23rd, 1947, cxxxiv, 17, 1,452.

This term is used in a generic sense and includes cases of phlebitis, thrombo-phlebitis and and phlebothrombosis as well as true aseptic thrombosis. The septic type is by far the commonest. The infection may originate on the face, inside the nose, throat or in the mastoid area.

The symptoms usually noted are chills, fever, headache, unilateral œdema of the bulbar conjunctiva, chemosis of the eyelids, limitation of eye movements and progressive exophthalmos. The signs rapidly become bilateral.

The disease must be differentiated from orbital cellulitis.

Three cases, with two recoveries, are reported in detail.

Surgical intervention is indicated only to drain the original focus, apart from this, treatment is purely medical. The combined use of sulfonamide compounds antibiotics and anti-coagulants in large doses is strongly advised. The writer feels that the early employment of heparin and dicoumarol administered simultaneously is desirable.

The article has a bibliography.

ANGUS A. CAMPBELL.

Treatment of Infections of the Neck. CARL H. McCASKEY, M.D. (Indianapolis). *Jour. A.M.A.*, August 2nd, 1947, cxxxiv, 14, 1,158.

In the treatment of infections of the neck, a knowledge of the following is essential:—

1. Fascial planes of the neck.
2. Primary source of infection.
3. Types of organism present.
4. The medical and surgical treatment to be used.

The fascial interspaces serve as paths of least resistance to the spread of infection. Infections following dental extraction may follow immediately or be delayed as long as two weeks. A peritonsillar abscess is one of the commonest causes of infection in the neck. Another is that in the pharyngomaxillary space following removal of tonsils under local anæsthesia. Mastoid infections may reach the neck as a Bezold's abscess, from the petrous pyramid, from the zygomatic cells and by way of a lateral sinus.

The most commonly found organisms are the streptococcus, staphylococcus and pneumococcus.

Before the formation of pus, chemotherapy should be used and attention given to the primary focus. When suppuration occurs, surgical drainage is necessarily to prevent invasion of the thorax. Ludwig's angina is treated by making a wide, horizontal incision under local anæsthesia.

The pharyngomaxillary space may be drained intra-orally, or externally by using the Mosher technique.

The article has three tables.

ANGUS A. CAMPBELL.