and March, 1935, treatment with radon and diathermy. There is now no growth visible; patient is well and without sputum. (Three years.)

5. *Female, aged 30.*—Admitted Victoria Park Hospital, November 16th, 1933. Since pleurisy in 1930 has had morning cough with slight expectoration, occasionally blood-stained. No loss of weight. Rather severe haemoptysis for some weeks before admission. On admission there was obstruction to, and pneumonitis of, left lower lobe. *Bronchoscopy.* A tumour obstructing left lower lobe bronchus. Alarming haemorrhage followed instrumentation. *Section.* "This appears to be a carcinoma of bronchus, but is not typical. There is a greater tendency than usual to an acinous formation of the cells, which are mainly columnar in shape." Treated with diathermy and radon. This patient is well, leading a normal life, without sputum, but there is still a tumour present, though it is reduced in size. (Five years.)

6. *Male, aged 45; Fruiterer.*—Influenza in January, 1933, cough and occasional expectoration since that date. Repeated haemoptysis since May, 1933, with pain in chest. Admitted Victoria Park Hospital September 29th, 1933. *Bronchoscopy.* A polypoid tumour in two parts at level of middle lobe bronchus. *Section.* Squamous-celled carcinoma. Treated with radon. In four months gained a stone and a half in weight. Is now fit and working, and no tumour is seen. (Two and a half years.)

7. *Male, aged 45; Manager of Bootshop.*—Transferred to Victoria Park Hospital from a country hospital February 9th, 1933. He had pneumonia three years ago. Cough has continued. In June, 1932, it became much worse; and at the end of the month he coughed dark blood for first time, and was admitted to Watford Hospital in November. On admission to Victoria Park Hospital: Temperature 100°. Clubbing of fingers. Left lung dull all over. Heart enlarged to the left. *Bronchoscopy.* A hard, pedunculated polyp obstructs the left lower lobe bronchus, from behind which pus exudes freely. *Section.* Tissue covered with stratified squamous epithelium, from which processes pass deeply into the fibro-cellular tissue beneath. In parts of section numerous leucocytes are seen, suggesting inflammation: thought to be a papilloma. At the second bronchoscopy the polyp was removed. This was followed by the expectoration of quantities of thin pus containing masses of yellowish granules, which were composed of clumps of acid-fast organisms (not *B. tuberculosis*). The man died shortly afterwards, and the condition was found to be due to a dermoid in which a process had grown into a bronchus, become segregated, and caused obstruction and pulmonary suppuration, from which the patient died.

8. *Female, aged 21; Domestic.*—Admitted to Victoria Park Hospital July, 1934, with a collapsed upper right lobe: thought to be due to a tuberculous gland. History of six months' morning cough, no expectoration, some loss of weight, night sweats, fainting, and vomiting, and a sharp stabbing pain in right chest. *Bronchoscopy.* Showed a mass blocking upper lobe bronchus—? gland, ? neoplasm. *Section.* Disintegrated portions of bronchial epithelium, connective tissue, and cartilage; no evidence of malignancy. A second section was returned definitely as haemangio-endothelioma. Treatment: diathermy and radon. Satisfactory progress. (One and a half years.)

9. *Female, aged 41.*—Had ? influenza fourteen years ago with ? pleural effusion, which was not tapped. After this illness she had recurrent attacks of pleurisy, always on the right, with occasional haemoptysis. The sputum gradually became offensive, and there were periodical febrile attacks, with tightness and wheeziness of chest. Two years ago was supposed to have had pneumonia on the right side, and later was admitted to Black Notley Sanatorium for investigation. Admitted to Victoria Park Hospital on June 7th, 1935. *Bronchoscopy.* A large polyp is seen blocking the right lower lobe bronchus below the middle lobe. Aspiration produced about 5 ounces of thick, offensive pus. *Section.* Reported as granuloma. Lipiodol shows most of lower lobe converted into a bronchiectatic abscess.

Our thanks are due to Dr. Roodhouse Gloyne and Dr. D. S. Page, pathologists at Victoria Park Hospital, for the histological work in relation to the above cases.

REFERENCES

- ¹ Myerson, M. C.: *Arch. Otolaryng.*, 1929, ix, 376.
- ² Wessler, H., and Rabin, C. B.: *Amer. Journ. Med. Sci.*, 1932, clxxxiii, 164.
- ³ Morlock, H. V., and Pinchin, A. J. S.: *British Medical Journal*, 1933, i, 911.
- ⁴ Paul, F.: *Monats. f. Ohren.*, 1930, lxiv, 669.
- ⁵ Burrell, L. S. T., and Trail, R. R.: *Lancet*, 1927, ii, 1180.
- ⁶ Ashbury, H. E.: *Amer. Journ. Roentgenol.*, 1929, xxi, 452.
- ⁷ Lloyd, M. S.: *New York State Journ. Med.*, 1931, xxxi, 471.
- ⁸ Geipel, P. Frankfurt: *Zeit. f. Path.*, 1931, xlii, 516.
- ⁹ Wessler and Rabin: *Loc. cit.*
- ¹⁰ Jackson, C., and Jackson, C. L.: *Journ. Amer. Med. Assoc.*, 1932, xcix, 1747.
- ¹¹ Peroni, A.: *Arch. Otolaryng.*, 1934, xix, 1.
- ¹² Kramer, R.: *Ann. Otol., Rhinol., and Laryngol.*, 1930, xxxix, 689.
- ¹³ Jackson, Chevalier: *Peroral Endoscopy and Laryng. Surgery*, 1915, p. 432.
- ¹⁴ Wessler, H., and Jacher, L.: *Clinical Roentgenology*, 1923, p. 151.
- ¹⁵ Orton, H. B.: *Laryngoscope*, 1924, xxxiv, 97.
- ¹⁶ Jesberg, S.: *Ann. Otol., Rhinol., and Laryngol.*, 1926, xxxv, 905.
- ¹⁷ Zinn, W. P.: *Ibid.*, 1927, xxxvi, 278.
- ¹⁸ Negus, V. E.: *Lancet*, 1927, ii, 1180.

SOME POINTS IN CONNEXION WITH SCLEROCORNEAL TREPHINING

BY

R. H. ELLIOT, M.D., F.R.C.S.
LIEUTENANT-COLONEL, LATE OF THE I.M.S.

My first sclerocorneal trephining for glaucoma were performed in August, 1909, and even now I get inquiries from different parts of the world as to details of the procedure. I have from the first employed a 2 mm. trephine and still do so, as it gives room enough to deal with uveal tissue if necessary. I cannot, however, emphasize too strongly that to drag uveal tissue into the trephine hole is to ask for trouble. If the trephine disk is seized with the same grip as the bulging iris and the two are cut with one snip of the scissors, uveal impaction will rarely, if ever, take place. This is cardinal.

Friends continue to send me mechanical trephines. Much as I appreciate their doing so, I am bound to state my strong preference for the hand-controlled instrument. I maintain that in skilful hands it is easy to use and much safer than the machine-driven apparatus. It also renders it easy to ensure that the trephine blade makes its first entry on the corneal side of the wound, a very important detail. Some surgeons advocate and practise making a very tiny conjunctival incision, pulling the flap down with a special instrument, and working at the bottom of the hole thus made. I still prefer the method I originally described of making a long concentric incision, and of dissecting down to the sclera and taking up as thick a pad as possible, while clearly exposing the limbus area. I do not believe that the other method presents any practical advantages, while it certainly involves working under great difficulties, especially when splitting the cornea. No part of the operation is more important than this latter procedure, for the further forward we can get the more sure we are of entering the anterior chamber and so of establishing reliable filtration.

I still advocate a small peripheral iridectomy, as the opening provided furnishes a sluice through which the aqueous can escape without carrying uveal tissue in front of it and so favouring impaction. I have for years adopted Foster Moore's suggestion of a continuous suture, carefully iodining the thread before and after each penetration of the conjunctival edges.

Impaction of Uveal Tissue

One question that most frequently reaches me is: "What can be done in those cases in which, after an apparently successful trephining, uveal tissue becomes

impacted in the trephine hole, thereby blocking it and stopping the filtration which had hitherto been all that could be desired?" An organization of the impacted tissue takes place and the passage of fluid through the hole becomes interfered with, and either ceases altogether or is so small in amount that it does not suffice to keep the tension down. A curious feature of these cases is that when a fresh trephine hole is made at another site, and the tension of the globe falls in consequence of the second operation, the original trephine aperture again starts to filter to some extent, and may be of considerable value in keeping the intraocular pressure down.

In rare cases one has to perform several trephinings in different areas until it becomes difficult to find a spot where the conjunctiva is sufficiently free to allow the flap to be dissected right up to the limbus. This latter is a very important point in the technique, and I have insisted on it ever since I first performed my operation.

While such cases are rare, they are so trying that they focus the surgeon's attention upon them, and cause him very great anxiety as to the best course he should pursue.

One such has recently been under my care in which the patient had suffered from interstitial keratitis and cataract. An uneventful operation for the latter condition was speedily followed by glaucoma, although there did not appear to be any condition explaining the rise of tension. He was successfully trephined above, but the aperture closed and a second trephining was done below. The second aperture became blocked by uveal tissue, which bulged through the trephine hole in that unpleasant manner that always bodes ill for the permanence of filtration. Obviously something had to be done, and I proposed to raise the flap again and to dissect out the tissue from the trephine hole. Anyone who has done this knows how difficult it often proves to raise the flap and how great the danger is of a vitreous escape. Colonel Kirkpatrick, who saw the case with me in consultation, made a very novel suggestion to me—namely, that I should balloon up the conjunctiva by a free injection of novocain and adrenaline, introduce a Ziegler's knife subconjunctively, and cut right through the base of the iris prolapse. This proved very easy to do. It was painless, and the whole operation took only a matter of seconds once the knife-needle was taken in hand. The result was an astonishing lowering of tension. The intraocular pressure fell to a very low subnormal, the cornea cleared of its steaminess, and the vision improved from 6/24 to 6/12, while the patient could read the second Jaeger type. He is still improving three months after the operation.

It is perhaps too early to say what the final result may be, but I shall never hesitate in future to employ this method where a trephine hole blocks up, and before trephining in a new place. Moreover, I shall certainly not wait long about it. Easy as the procedure was, I think it will be easier still when done very early. It is much simpler than a second trephining, and it in no way prevents that operation being undertaken at a fresh site later on. It is the first time that I have been able to give a definite and satisfactory answer to those who have asked me what to do in these distressing cases. It is unnecessary to insist that, small as this procedure is, it demands the most rigid care to avoid all sepsis.

Detachment of Choroid after Trephining

A great deal has been made of detachment of the choroid after trephining. As a matter of fact, this complication may be met with after any serious method of operating for glaucoma, and after extraction of cataract. The history of loss of field, and the detachment with its dark curved edge seen to one or other side of the upper part of the fundus, make the diagnosis easy. I tried in these cases keeping the patients lying down until they were tired of it. I let them get up, and the detachment disappeared. I do not believe that the recumbent position presents any advantage, and I have found the

ultimate prognosis good in all cases. Whilst warning the patient against violent exercise or strain, I would interfere with his habits as little as possible, and give a most favourable prognosis to cheer him up.

Post-operative Treatment

Far too little attention is paid to the keeping of the pupil widely dilated after operation. I see quite a number of cases in which filtration has been successfully established and the tension has been permanently reduced, but vision has been practically lost, due to exudation into the pupillary area. Atropine should be instilled at the time of the operation, and for several weeks afterwards. This is vital to the success of the operation.

The great value of massage after trephining has, in my opinion, not been properly appreciated. Where there is a tendency for the filtration to lessen rapidly in the early weeks after operation I employ digital massage freely. It is not necessary to press heavily with the fingers; indeed, a very light touch does all that a heavier one will do, while at the same time it avoids the infliction of pain. The patient can be taught to do it for himself, being instructed to stop as soon as he feels the eye soften. He will become very expert in this manoeuvre. In not a few cases where one has reason to suspect that the tension rises from time to time in spite of the trephine hole, one can keep the intraocular pressure down by massage for months or even for years, and thus avoid the necessity for a second operation. The essential point is that the movements of the fingers should be directed toward the centre of the globe, and that the force used should not be dissipated in stroking movements, which are of little value.

The removal of the stitch on the fifth day after anaesthetization with cocaine and adrenaline should be quite painless. The silk can be unthreaded from one end of the wound stitch by stitch. If it tends to stick it can be cut across *in situ* at one or two places and will then come out very easily. The complaint which one hears from patients that "taking out the stitch was very painful" will never be made if these small points are attended to.

Much has been written about post-operative infection through the flap. In my experience this is a very rare complication. Cases are met with after trephining, after other operations for glaucoma, and after cataract extraction, in which, many months or years later, a septic iridocyclitis may set in; but a staining of the flap area does not show abrasion of the epithelium as an indication of a path for sepsis from the outside. On the other hand, a careful search of the patient for a focus of sepsis will often be rewarded by a speedy change for the better as soon as that focus is removed.

Should cataract supervene, an extraction may safely be performed if one rule is kept in mind. A large part of the incision—that opposite the filtering scar—should be made in the cornea, while a good broad bridge is fashioned on one or the other side of the incision. This makes for, if it does not ensure, a very early closure of the section, and avoids interference with the filtering scar. If the bridge is made right up through the filtering scar there is grave danger of cicatrization tying down the flap, interfering with filtration, and leading to the return of the glaucoma.

The sixth Turkish Medical Congress will be held at Ankara at the end of October, under the patronage of the President of the Republic. The principal subjects set down for discussion are infective rheumatism and toxico-manias. Further information can be obtained from the general secretary, Professor Fahrettin Kerim, Boulevard d'Angora 15, Stamboul.