spite of the fact that it was markedly penicillin-sensitive. This suggests that the dosage was too low. The strain of *C. diphtheriae gravis* was inhibited by 0.004 unit of penicillin.

Further Cases.—Three further cases have been treated. All were mild, all received one million units of penicillin a day for three days, and in none was I able to demonstrate diphtheria bacilli after the first day's treatment.

Discussion and Conclusions

Though there is agreement that *C. diphtheriae* is penicillin-sensitive, considerable disagreement exists as to the degrees of sensitivity recorded. A possible explanation is the absence of any standard technique for the estimation of sensitivity, and in particular of the size of the inoculum.

The experimental work in animals has produced conflicting results, so that there is little evidence on which to judge the possibility of effective treatment in man.

An attempt has been made to review all the cases of penicillin-treated diphtheria that have been described in the literature at the time of writing. In this country no case of diphtheria without secondary infection appears to have responded to treatment in a convincing fashion. By far the most important observations on this subject are those of Karelitz *et al.*, who, in spite of relatively large dosage (160,000–240,000 units a day), failed to observe any increase in rate of clearance of the membrane or any reduction in the incidence of toxic complications. The value of their report is impaired by their failure to use tellurite media and penicillinase for culture purposes; if they had done so their figures for the persistence of diphtheria bacilli would probably have been from 10 to 30% higher.

The most valuable criterion on which to judge the response to penicillin treatment would appear to be the time taken for *C. diphtheriae* to be eliminated from the lesions, thus excluding the effect of secondary infection. The dose of penicillin employed might reasonably be supposed to be that which reduces this time to the minimum.

Evidence is presented that *C. diphtheriae* can be eliminated in under 24 hours in severe cases of diphtheria with a dosage of 1,000,000 units a day. Though a smaller dose than this would probably be inadequate, a larger dose might be even more effective.

Summary

The available experimental and clinical evidence on the penicillin treatment of diphtheria is reviewed.

Experimental and clinical evidence is brought forward to show that it is possible to remove diphtheria bacilli from the upper respiratory tract within 24 hours.

A plea is made for larger dosage; at least 1,000,000 units a day would appear to be desirable in severe cases.

The value of penicillin is particularly striking in the presence of secondary infection.

The importance of early adequate antitoxin administration is stressed.

REFERENCES

- Archer, N. (1945). *Med. Off.*, **73**, 116.
 Chain, E., *et al.* (1940). *Lancet*, **2**, 226.
 Christie, A. B., and Preston, J. C. (1946). *British Medical Journal*, **1**, 433.
 Clutterbuck, P. W., *et al.* (1932). *Biochem. J.*, **26**, 1907.
 De, M. N., Chatterjee, J. R., and Ganguli, L. (1947). *British Medical Journal*, **1**, 376.
 Dodds, R. J. (1946). *Ibid.*, **2**, 8.
 Ercoli, N., Lewis, M. N., and Moench, L. J. (1945). *J. Pharmacol.*, **84**, 120.
 Fleming, A. (1929). *Brit. J. exp. Path.*, **10**, 226.
 Karelitz, S., *et al.* (1947). *J. Pediatr.*, **30**, 18.
 Long, D. A. (1946a). *British Medical Journal*, **1**, 627.
 — (1946b). *Ibid.*, **1**, 773.
 Symons, A. D. (1945). *Med. Off.*, **73**, 101.
 — (1946). *Ibid.*, **75**, 224.
 Young, R. M., and Mood, G. M. (1945). *J. Bact.*, **50**, 205.

SPLINTS FOR FRACTURED NOSES

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Fractures of the nose are common injuries, but their early treatment is often unsatisfactory because displacement is obscured by haematoma and oedema. If telescoping of the septum does not obstruct the airway and there is no lateral deviation or depression of the bridge-line, no active surgical treatment is required. If any or all of these displacements have occurred, early treatment by the classical Gillies-Kilner (1929) technique of disimpaction and reduction yields excellent results with a minimum of discomfort to the patient. Should the displacement be missed in the early stages serious disability and disfigurement result, which can be put right only by more extensive procedures such as nasal refracture or bone-grafting (Oldfield, 1944).

After reduction of a recently fractured nose a simple type of splint is required such as a "cellona slab" (Fig. 1),

FIG. 1

FIG. 2

FIG. 1.—A "cellona slab" used for splinting a recently fractured nose after reduction.

FIG. 2.—A Safian brace.

a collodion splint reinforced by a moulded lead plate, or a Safian brace (Fig. 2), all of which serve to hold the nose in the correct position until union occurs in the correct alignment. This usually takes place in a very short time. If the bridge-line has been depressed, the "St. Louis method" is indicated (Fig. 3). Nasal refracture is required

FIG. 3

FIG. 4

FIG. 3.—"St. Louis method." Two lateral acrylic struts held in position by two through-and-through mattress sutures.

FIG. 4.—Nasal splint in position.

when the nose has been allowed to unite in malposition. Even if over-correction has been attained and a wedge of bone removed from the convex side there is always a tendency for the nose to slip back into malposition unless fixed by a rigid splint for a considerable period.

A plaster head-cap is notoriously inefficient as a fixed base for facial splintage, but a dental-cap splint attached to the maxillary teeth gives an excellent base for rigid fixation of a nasal splint. The splint described below has the added practical advantage that each lateral element can be adjusted in three planes and pressure can be applied wherever it is required. The patient does not find it uncomfortable to wear, as no head-cap or straps are necessary. It requires the close co-operation of a dental colleague for the fixation of the cap splints and at least four sound maxillary teeth for efficient anchorage (Fig. 4).

Construction of the Splint (Fig. 5).—(A) One brass plate for attaching the extraoral portion to a dental-cap splint.

FIG. 5.—Diagram of nasal splint. (For description, see text.)

The plate carries two arms of brass rod, gauge 4 mm., which are shaped to avoid the upper lip. (B) Four modified Clouston-Walker universal joints for connecting A to C by means of straight brass rods. (C) Two nasal supports, each consisting of a rubber-cushioned brass plate and arm. Small nuts are threaded on to the ends of all the rods so as to prevent the apparatus from becoming disconnected when the universal joints are slackened.

Method of Use.—Stage 1: Preliminary to the operation for refracture and reduction, an impression is taken of the maxillary teeth and then a cast-metal cap splint is made and fixed in position on the patient. Stage 2: At the end of the operation the nasal splint is attached to the dental-cap splint by means of two 6-B.A. screws. The surgeon places the lateral supporting cushions in the desired position while an assistant locks all four universal joints with a spanner.

REFERENCES

- Gillies, H. D., and Kilner, T. Pomfret (1929). *Lancet*, 1, 147.
Oldfield, M. C. (1944). *Brit. J. Surg.*, 32, 237.

The Société Internationale de Chirurgie will hold its twelfth Congress in London on Sept. 14-20, with Dr. L. Mayer (Brussels) presiding. Chairman of the English committee is Prof. G. Grey Turner, and the hon. sec. is Mr. W. S. Wright. The subjects to be discussed are as follows: (1) The Operative Treatment of Fractures, by Prof. R. Danis (Brussels); (2) the Role of Penicillin in Surgical Practice, by Sir Alexander Fleming (London); (3) Recent Advances in Arteriography and Venography, by Prof. R. dos Santos (Lisbon); (4) Recent Advances in Vascular Surgery, by Prof. R. Leriche (Paris); (5) the Surgical Treatment of Pulmonary Stenosis, by Prof. Blalock (Baltimore); (6) the Role of Vasodilatation in Arterial Diseases, by Dr. J. Diez (Buenos Aires); (7) the Results of Heparin in Surgery, by Dr. Crafoord (Stockholm); (8) Skin Defects: their Repair by Flaps and Free Skin Grafts, by Prof. T. Pomfret Kilner (Oxford); (9) Results of Early Operation in War Wounds of the Lungs, by Dr. M. Bastos-Ansart (Barcelona); (10) Recent Progress in the Treatment of Burns, by a Russian surgeon. Translated summaries of the papers will be circulated beforehand. Members of the society do not pay an additional fee to attend the congress, but the subscription for the years 1939-47 must be paid. The sum is 1,000 Belgian francs. Members who have already paid a subscription at a higher rate will be credited with the extra amount; those who have not yet paid their subscription should send it to Dr. Paul Lorthioir, 76, rue Faider, Brussels, or to the local treasurer if transfer of funds out of the country is not allowed. Those intending to be present should notify Dr. L. Dejardin, General Secretary, 141, rue Belliard, Brussels.

Medical Memoranda

Temporary Hydronephrosis

The following case report seems to be interesting enough to merit publication.

CASE REPORT

The patient, a corporal aged 25, was admitted to the British Military Hospital, Amiriya, on Oct. 9, 1946, with a history of urinary dysfunction for three days. This consisted of dysuria, a poor stream, and frequency—he passed urine three times nightly. He had no penile discharge, and the prostate was slightly enlarged but not tender. Pus could not be forced into the external urinary meatus on prostatic massage. Full physical examination elicited no further abnormality.

Two days after entry into hospital his symptoms were unchanged, but the prostate was now very large and tender, prostatic massage producing a free flow of pus. He developed a pyrexia of 101° F. (38.3° C.), which became intermittent. A diagnosis of acute prostatitis was made. Direct smears after prostatic massage were negative for organisms on repeated occasions. Five midstream urine specimens contained many pus cells, but no other abnormality was found. No organisms were grown. Three 24-hour urine specimens were negative for acid-fast bacilli, both on culture and on guinea-pig inoculation. The blood urea was 32 mg. per 100 ml. The white blood cells numbered 10,600 per c.mm. (polymorphs, 70.5%; lymphocytes, 19.5%; monocytes, 8%; eosinophils, 2%). A skiagram of the chest showed no evidence of a lung lesion.

Seven days after the sudden marked prostatic enlargement an intravenous pyelogram was performed. This showed gross bilateral hydronephrosis and hydro-ureter (see Fig. 1). He was started on a course of sulphadiazine and penicillin, 40,000 units three-hourly, and this was continued for five days. During this time his symptoms were unchanged, he still had an intermittent pyrexia and his prostate remained large and tender. The chemotherapy produced no apparent result and was discontinued after five days. On Oct. 28 the prostate was much smaller, the temperature fell and remained normal, and his urinary symptoms became less pronounced. He still complained of slight pain on urinating, but his stream was good and he passed urine only once or twice nightly. On Nov. 11 he was symptom-free and the prostate was normal in size. A second intravenous pyelogram showed a great reduction in the size of both renal pelvis and well-pointed calices (see Fig. 2).

We can conclude that the hydronephrosis developed in one week, as the enlargement of the prostate occurred quite suddenly on the third day after admission. The pyelogram showing gross hydronephrosis and hydro-ureter made us think that these changes might be permanent. It may not be generally appreciated that marked hydronephrosis may occur suddenly and can be reversible if the obstruction is removed early enough. These facts are well illustrated by this case.

FIG. 1.—Pyelogram showing gross bilateral hydronephrosis and hydro-ureter.

FIG. 2.—Pyelogram, taken four weeks after Fig. 1.

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