the arm. Head suspension, on the other hand, tends to relieve the pain. In the arm the signs depend upon the root affected. In the case of the sixth cervical root there may be weakness of the biceps muscle and diminution of the biceps-jerk. In the case of the seventh cervical root there may be weakness of the triceps and wrist extensors, with diminution of the triceps-jerk. There may be some blunting of sensation, but not complete anaesthesia, in the distribution of the affected root.

Diagnosis.—This is based on a careful consideration of the history and findings, and may be supported by radiological changes in the form of narrowing of one or other of the cervical disk spaces. Radiological examination also helps to exclude other causes of root symptoms. In occasional cases it may be desirable to seek more accurate information by means of contrast myelography. Somewhat similar symptoms may be produced by pressure on the cervical nerves after their exit from the bony column—e.g., by a cervical rib. Differential diagnosis is not always easy.

Treatment.—Initially, conservative measures should be tried. Minor degrees are often helped by physiotherapy. Occasionally a judicious manipulation of the cervical spine is useful and there is little risk of increasing the amount of prolapse if flexion movement is avoided. None the less, the risk should always be borne in mind when considering the advisability of manipulation, particularly under anaesthesia. Severer cases can be relieved by rest in bed, with traction of 5–10 lb. (2.27–4.54 kg.) applied via a halter. Within 10 to 14 days relief is sufficient to allow the patient to get up, but it is wise to apply a collar of moulded leather or plaster-of-Paris for the next six to eight weeks. It is rarely necessary to include the arm in the plaster. Only when the symptoms are severe and persistent or when disabling attacks occur should operative treatment be considered.

Prognosis is on the whole good. The great majority of cases clear up spontaneously within six to 12 weeks. Persistent or recurrent cases have been satisfactorily treated by operation.

(See also an annotation on this subject in the *Journal* of March 13 at p. 505 and the report of a discussion in our issue of March 20 at p. 557.)

Estimation of Bile Acids

Q.—*Is there any reliable test for estimating bile acids in the plasma or serum?*

A.—Several methods have been described, but the variation in their "normal range" suggests that they do not measure true bile-acid concentration. The most satisfactory appears to be that of Josephson (*Biochem. J.*, 1935, **29**, 1519), which was recently used by Sherlock and Walshe (*Clin. Sci.*, 1948, **6**, 223) in a thorough survey. The normal range is 0.2–3 mg. per 100 ml., and rises in obstructive jaundice to as high as 6.6 mg. per 100 ml. (as cholic acid), but the overlap between normal persons, patients with infective hepatitis, and patients with obstructive jaundice is so great that the results of the test are of no clinical value in the differential diagnosis of liver disease.

Penicillin Blood Levels

Q.—*In a moderately severe infection, with or without pyrexia, such as tonsillitis, furunculosis, or septic wounds, from which an organism as penicillin-sensitive as the Oxford staphylococcus has been cultured in the laboratory, what level of penicillin in the blood should be maintained, and for how long? The blood level is of course high immediately after parenteral administration, depending on the dose given. Does it necessarily follow that the raising of the blood level will shorten the duration of the infection, or must one be guided by the patient's condition before stopping penicillin?*

A.—The minimum concentration inhibiting the growth of such an organism is about 0.02 unit per ml. If this is continuously maintained or exceeded in the blood, it will also be maintained in the infected area of tissue. If adequate doses are given at reasonably short intervals, even though the blood level falls below this minimum before another dose is due, diffusion into the tissues while the level is high will ensure that local effect is maintained. How efficient this mechanism is must depend on the rate of exudation into the inflamed area and other factors. There is *in-vitro* evidence that somewhat higher concentrations are more rapidly bactericidal, but the range to which this statement applies is small, and above this no increase in concentration has any enhanced effect. There can be no arbitrary rules about the duration of treatment; the indications for stopping it are clinical signs or laboratory evidence that the infection has been overcome.

NOTES AND COMMENTS

Archives of Disease in Childhood.—The Editor of the *Medical Journal of Australia*, Dr. Mervyn Archdall, wishes to obtain copies of the March and June, 1944, issues of the *Archives of Disease in Childhood*, which are now out of print. Dr. Archdall's address is Seamer Street, Glebe, New South Wales, Australia.

Treatment of Chilblains.—Dr. W. H. MCKINSTRY (Rottingdean, Sussex) writes: Dr. R. John Gourlay (Feb. 21, p. 336) has discovered that nicotinic acid will cure chilblains. When I was in practice about 1896 I cured chilblains by giving cod-liver oil. This remedy was given by me as I found my patients taking cod-liver oil for other diseases, as phthisis, did not suffer from chilblains. Nicotinic acid at that time was unknown.

Vitamin B and Growth of Hair.—Dr. AGNES SAVILL (London, W.) writes: The subject of the effect of *p*-aminobenzoic acid on hair, especially on greying hair, was investigated by Benjamin Sieve and several other American writers many years ago. Sieve published the results on 460 patients in 1941. The drug became unobtainable during the war, as it was required for other purposes. Doubtless this explains why this research has been forgotten. In the third edition of *The Hair and Scalp* I have given references to all that I could trace on the subject. The reprint has taken over two years to appear, owing to the acute paper shortage from which all medical publishers have suffered.

Piercing the Ears.—Dr. H. MAITLAND MOIR (Currie, Midlothian) writes: The ring presented by the patient has a locking device. It is impossible to lead the one half of the ring through a straight piercing. After piercing the ear with a straight skin-needle, the two ends of the ring are placed in the "pierce," i.e., one behind and the other in front; then they are forced together and lock in the tissues. Before learning this trick I used to use a silk suture, which was effective if unsightly.

Cataract.—"Partial Eclipse" writes: Perhaps your inquirer on cataract ("Any Questions?" March 13, p. 531) may be interested in my own case. My left eye was operated on four years ago for cataract. Vision, when corrected with a strong lens, is 6/5 in that eye. Vision in right eye is P.L. only, owing to a mature cataract in that eye. I can read for hours without strain. The main drawbacks are: (1) The peripheral field is severely restricted. (2) Inability to judge distance. An object 9 feet distant appears to be only 6 feet away. (3) Objects are considerably magnified.

Some of the consequences of these drawbacks are more commonly felt out of doors. Movement on a pavement is generally punctuated by bumps on the right side from pedestrians who approach from my blind side. To cross a road carrying only light traffic I must wait at a crossing and then cross with the crowd. I can and do ride a push-cycle on quiet roads. When making a turn to the right I can sometimes manage to look over my left shoulder far enough to see traffic approaching from the rear, but I find it generally safer to dismount. I was desirous of taking up motor-cycling again, but decided that the risk was too great. It would be impossible for me now to drive a motor-car with safety anywhere outside the Sahara Desert, though before the onset of my cataract I had driven for many years.

A one-eyed man with a lens in his eye has many advantages over the individual who has to carry his lens on his nose.

Correction.—In the annotation under the heading of "Thirty-million Volt *X* Rays," published in the *Journal* of March 20 we referred to developments in the nuclear physics laboratories of the General Electric Company at Stafford. This was an error, and the reference should have been to the English Electric Company.

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