serial audiometry or to find out whether steroids would have improved that deafness.

Analysis of the Joint Capsule Collagen Content. Studies in Control, Rheumatoid, and Ehlers-Danlos Knees. By M. I. V. JAYSON, G. STEER, A. ST. J. DIXON, and P. BEIGHTON (*Royal National Hospital, Bath*). This paper and the discussion thereon will appear in a future issue of the *Annals*.

Chlorambucil in the Management of Juvenile Chronic Polyarthritis complicated by Amyloidosis. By B. M. ANSELL, A. EGHTEDARI, and E. G. L. BYWATERS (*Canadian Red Cross Memorial Hospital, Taplow*).

The overall prognosis in Still's disease is reasonably good since the disease usually becomes inactive and, with adequate supervision, function is well maintained. However, even in comparatively mild cases, amyloidosis may develop and lead to death. To date, no therapy has been shown to influence the progress of the amyloidosis, but in patients in whom the disease has become quiescent, the progression of the amyloidosis appears to stop. Because of this, during the past 3½ years, we have used chlorambucil in an attempt to control disease activity in twelve children with Still's disease who had developed this complication. The initial dosage was 0.2 mg./kg. bodyweight/day and this was modified according to the clinical response or to the effect on the white blood count and platelets.

Initially the aim was to give 6 months of therapy. In two cases this was not possible because of thrombocytopenia in one and severe skin infection in one. One of these patients who already showed a rise in blood urea at the commencement of therapy has died. The others have received at least 6 months of therapy. All have shown a reduction in the number of active joints and an improvement in function tests. On eight occasions it was necessary to stop treatment on account of a fall in the white blood count or platelets, but the blood picture recovered rapidly, and when necessary it has been possible to resume treatment at a lower dosage without haematological problems. In two cases it has been possible to discontinue corticosteroid and all have had reduced dosage. In two, chlorambucil has been stopped with maintenance of a satisfactory clinical state to date, but in two others, after remissions of 8 and 10 months, relapse has occurred requiring re-treatment. One of these is now off treatment. In three, the amyloidosis, as shown by a fall in total urinary protein excretion and return of the serum protein pattern to normal, return of the cholesterol or maintenance of the normal cholesterol, and maintenance of the normal blood urea, has apparently improved. As might be expected before treatment, the immunoglobulins in the majority of cases showed particularly high IgG, although in three it was lower than our usual levels in active Still's disease. The IgG showed a marked fall during treatment; the level tended to rise when chlorambucil was stopped but not to previous levels in those patients who had gone into remission.

One further death has occurred, but this was in the case of a patient in whom treatment could be maintained for only 6 months and who was already severely ill when therapy was started. A further patient in whom therapy could be maintained for only 3 months is showing a

deterioration of renal function.

It is concluded that treatment with chlorambucil, if it is to be of any value, should be started before there is evidence of serious renal dysfunction, and that every effort should be made to control the disease activity with the lowest possible dosage. In this way haematological side-effects can be minimized.

Discussion

DR. D. L. GARDNER (*Kennedy Institute*) What is the effect of chlorambucil upon the glomerulus? Is there a direct action upon the deposits of amyloid or an indirect action mediated through the lymphoreticular system?

DR. ANSELL We consider that the process is not a direct action on the glomeruli but probably the disease itself improving and further deposition not occurring. Whether the amyloid is resorbing I do not know; we have one rectal biopsy which appears to show no amyloid after treatment.

DR. J. H. GLYN (*London*) Is it established whether steroids have any effect in the production of amyloid or on the course of established amyloidosis? There was discussion about this in the early days of steroids. I believe Dr. West postulated that they actually caused amyloidosis.

DR. ANSELL We know that in the majority of our cases the disease has been severe and that many had been on steroids; those which I discussed today had all had steroids. In our previous work we found that the addition of steroids did not seem to help those patients who had amyloid, but if their disease went into remission they improved. In the pre-steroid era we saw about the same number as we are seeing now.

Reduced Glomerular Function in Rheumatoid Arthritis. By H. C. BERRY (*Guy's Hospital*).

In the course of a survey of the renal function of 97 unselected patients with classical or definite rheumatoid arthritis, the glomerular filtration rate was estimated by means of the endogenous creatinine clearance test. The average age of the group was 53.1 years and the average duration of arthritis 9.7 years. 76 per cent. had an erosive arthritis, 67 per cent. were seropositive, and 33 per cent. had subcutaneous rheumatoid nodules.

In 49 patients the creatinine clearance was less than 80 ml./min. As expected, lower values were found in females and in older patients, but no correlation was seen with duration of disease. It was observed that patients whose disease was characterized by the presence of erosions and/or nodules had lower clearance values than the remainder, the difference being statistically significant and not explicable by difference of age.

No correlation was found between glomerular function and treatment with salicylate-containing analgesic compounds, gold, or steroids.

It is concluded that the glomerular functional impairment is an expression of rheumatoid disease *per se*.

Discussion

PROF. E. G. L. BYWATERS (*Hammersmith*) Would Dr. Berry say whether he has looked at his patients for