should always support the lumbar region and should be rearranged several times during the day; and the mattress should not be too soft.

Should backache occur in spite of these precautions, a tight strapping of the lumbo-sacral region usually gives relief in a short time.

It is extraordinary, however, how difficult it has proved to get these simple precautionary measures introduced and carried out by nursing staff. Doubtless this is due to the rigid routine instruction during training; and to get nurses to alter this routine may prove extremely difficult, as I have found. Nevertheless when they have put these measures into practice great suffering has been spared to these patients and their convalescence has been made much easier and swifter.

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Investigations on Long-acting Corticotrophin

Corticotrophin remains in the body for only a short time after administration. Sayers *et al.* (1949) found, in two normal persons, the highest blood concentration at the conclusion of intravenous infusions for a half and one hour respectively, whereas three hours after starting the infusions the corticotrophin level had fallen to the control value.

While the decrease in number of eosinophil leucocytes is accepted as a standard for increased activity of the adrenal glands, it is known that the number of eosinophil

FIG. 1.—Case 1. The effect of six 3½-I.U. doses of corticotrophin a day compared with that of one dose of 21 I.U. of long-acting corticotrophin of the same batch.

FIG. 2.—Case 2. The effect of six 3½-I.U. doses of corticotrophin a day compared with that of one dose of 21 I.U. of long-acting corticotrophin of the same batch.

leucocytes in the blood does not decrease after a single intravenous injection of corticotrophin (Renold *et al.*, 1952). One intramuscular injection daily, given on three consecutive days, does not stimulate the adrenal cortex as measured by the excretion of 17-ketosteroids in the urine (Querido *et al.*, 1951). The daily therapeutic dose of corticotrophin must therefore be subdivided. This is inconvenient for the patient as well as for the nursing personnel, and consequently a search has been made for an A.C.T.H. preparation which will be effective when injected only once daily. The preparations described below seem to meet these requirements.

Methods.—Using the method described by Goslings *et al.* (1953), we gave six 3½-I.U. doses of the Organon preparation C/41 daily to two male patients suffering from rheumatoid arthritis. The results were compared with those from one 21-I.U. dose of the Organon long-acting (CLA) preparation of the same batch. In the intervals the patients were given dummy injections. The 17-ketosteroids excreted in the urine in 24 hours were assayed according to the method of Kassenaar *et al.* (1950). Eosinophil leucocyte readings were taken every morning at the same time, before breakfast and previous to the first injection, and the cells were stained according to the method of Zollikofer (1901).

Results.—The eosinophil leucocytes showed a distinct decrease during injection of the normal preparation (C), and also during that of the long-acting preparation (CLA) (Figs. 1 and 2). Both C and CLA had a marked effect on the excretion of 17-ketosteroids in the 24-hour urine. In Case 1 (Fig. 1) these values were of the same order of magnitude; in Case 2 (Fig. 2) the excretion was about 80% more during the CLA-period than during the period in which the normal preparation was given.

DISCUSSION

From the criteria of Goslings *et al.* (1953) it may be concluded that CLA has a satisfactory action. This is in accordance with the clinical results obtained by us, and by others (Solem and Holterman, 1952) with zinc-protamine preparations. It is not intended to discuss the validity or otherwise of the Sayers test for corticotrophic preparations. It is important, however, to remember that this test requires intravenous injections, and that only the immediate effect is measured. The long-acting preparations do not lend themselves to intravenous injection, and their effect is spread out over a longer period. It does not seem correct, therefore, to express the strength of a CLA preparation in Sayers units of the basic material from which these preparations are made. Furthermore, it is possible that in preparing CLA some change in the activity occurs.

In order to obtain reliable data on long-acting preparations for clinical use it seems necessary to compare these preparations with ordinary preparations of the same batch, based on the excretion of 17-ketosteroids in the urine in men.

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