Adrenal Virilism: Abnormal Response to ACTH.—A. STUART MASON, M.R.C.P.

Case history.—Female, aged 6 years 11 months. Has four siblings, all normal. She was noticed to have an enlarged clitoris at birth. Since that time she has been healthy, recovering from minor infections normally. Since the age of 5 years it was noticed that she was growing more rapidly than normal, and there was an increasing growth of pubic hair. She has the normal interests of a little girl, but has greater muscular strength than the average. On occasions she has had severe frontal headaches followed by a vomit, the whole attack lasting a few hours.

On examination.—Height 3 ft. 11½ in. Weight 3 st. 8 lb. Normal feminine little girl, thin but well-developed muscles. Complexion clear. No facial hair. Body hair within normal limits except for small amount of axillary hair and profuse pubic hair. No breast development. Labia majora greatly developed in comparison to age. Clitoris greatly enlarged. Small vaginal orifice, separate from urethral opening. Uterus felt *per rectum.*

All other systems normal. B.P. 115/75.

Investigations.—X-ray skull and intravenous pyelogram apparently normal. Bone age (from X-rays) about 12 years. 17-ketosteroid output varying from 20–40 mg. per twenty-four hours. β fraction normal (17-ketosteroids were 11 mg. per twenty-four hours at age of 5 years).

Four-hour eosinophil test with ACTH and later with adrenaline showed no significant eosinopenia.

The patient was kept on a diet constant in NaCl, water and nitrogen content. After a four-day control period she was given ACTH six-hourly for four days (equivalent of 50 mg. Armour's standard daily). This resulted in a rise of 17-K.S. output. But there was no fall in circulating eosinophils, and no change in the urinary sodium, chloride and potassium. At a later date she was placed on a low salt (less than 0·5 gramme daily) diet, which resulted in an immediate diminution of urinary NaCl.

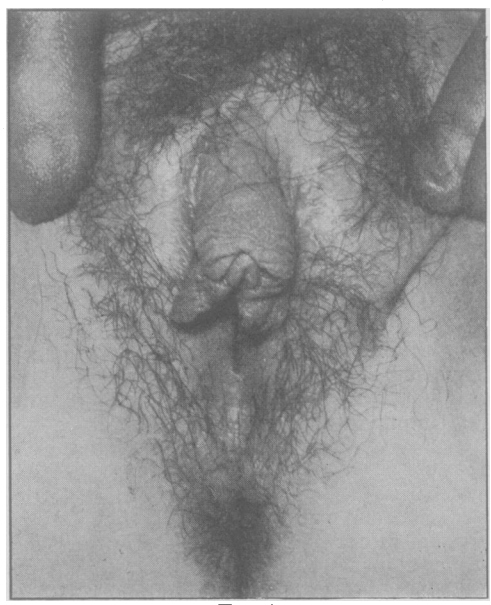

FIG. 1.

Comment.—A diagnosis of adrenal virilism was made. As the condition was present at birth and had progressed slowly, it was evident that adrenal hyperplasia, not tumour formation, was the underlying pathology. There was no evidence of Addison's disease supervening, and the patient responded normally to salt withdrawal. In response to ACTH there was an increased excretion of 17-ketosteroids, but no evidence of metabolically active hormones being produced. It is suggested that in this case 17-ketosteroids are formed from hormone precursors, and not from breakdown of adrenal hormones. The absence of salt retention with ACTH, together with a normal inhibition of salt excretion with dietary restriction of salt, suggests some control of salt balance apart from ACTH release. Adrenal virilism appears to be due to an abnormal adrenal response to normal pituitary stimulation. This is in accord with the findings of Bartter *et al.* (1950) *J. clin. Invest.*, **29**, 2797.

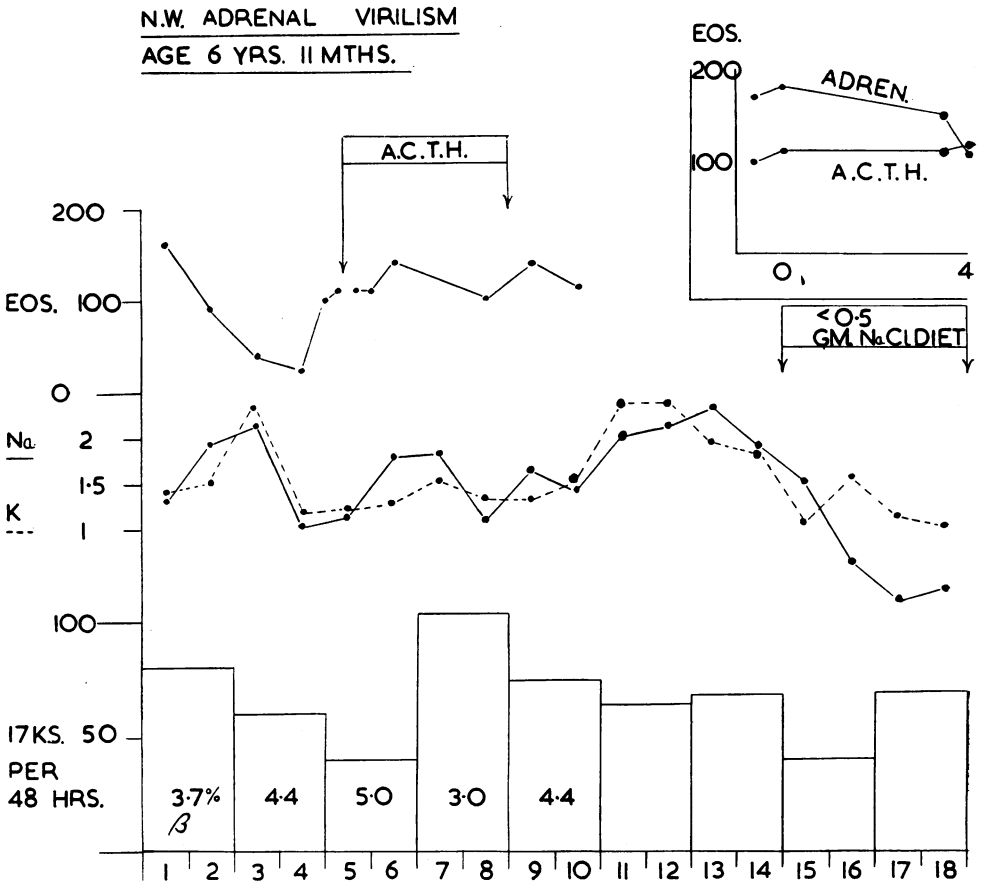

FIG. 2.—Chart showing urinary excretion of sodium, potassium and 17-K.S., with total circulatory eosinophils. Eosinophils expressed as total per c.mm. Urinary excretion of potassium and sodium expressed in grammes/twenty-four hours. 17-ketosteroids expressed as mg./forty-eight hours. β fraction as percentage. Upper right inset—eosinophil response four hours after ACTH and adrenaline (Dr. Stuart Mason's case).

Dr. F. T. G. Prunty: The fact that there was no lack of ability to retain salt in this case, coupled with the observation that ACTH produced increased 17-ketosteroid excretion in the absence of salt retention or eosinopenia, is of great importance. If Dr. Mason's interpretation, that the adrenal cortex was unable to synthesize glucocorticoid, is correct, the findings should be considered in the light of the work of Deane, indicating the secretion of salt-retaining steroids in the rat, independently of the action of ACTH.

Post-partum Simmonds' Disease with Subsequent Pregnancy and Spontaneous Improvement.—P. M. F. BISHOP, D.M., and R. R. DE MOWBRAY, B.M., M.R.C.P.

Mrs. J. A., aged 27, a housewife with one child living.

Past history.—Uneventful, except for asthma since the age of 19.

History of present condition.—The menarche occurred at the age of 13 and menstruation was subsequently normal.

At the age of 22 she had her first child. There were two or three slight shows during the pregnancy and a severe post-partum hæmorrhage which necessitated a blood transfusion of four pints; bleeding continued for three weeks. The child survived only two days.

Following the confinement, she became very sensitive to cold, complained of lassitude, and headache, lost weight from 9 st. 4 lb. to 7 st. 6 lb. and developed great muscular weakness. Menstruation did not return, except for a slight show three months after the confinement and again four months after.

At the age of 23 she became pregnant again but miscarried at 3 months.

At the age of 24, having still had no menstrual periods, she became pregnant for the third time and continued to term. During this pregnancy she improved considerably, gaining in weight up to 9 st. 10 lb. She became less tired and could walk more easily. The child survived, and is still alive and well.