Thyroid Depression: ACTH and cortisone may produce suppression of the thyroid [4] as part of the over-all suppression of the anterior lobe of the pituitary gland—thyroid-stimulating hormone being reduced as well as the production of adrenocorticotropic hormone and gonadotropic hormone. The reduction of thyroid activity never reaches serious proportions and may be treated with very small doses of thyroid. Caution should be exercised in using thyroid immediately after the withdrawal of ACTH or cortisone inasmuch as thyroid administration in the presence of adrenal cortical insufficiency, whether relative or absolute, may prove fatal.

Gonadal Depression: Serious complications arising from disturbances of the gonads are unknown. However, there are certain changes which should be discussed. Probably the most common change noted is amenorrhea. This is usually only temporary, lasting throughout the course of treatment, whereas normal menses return two or three months after treatment has been discontinued. In the male there may be a decrease in sexual drive, which occurs only if the treatment is prolonged and may not be due to gonadal suppression. No specific treatment is indicated.

Other Changes.—In this category are included a variety of changes whose physiological basis is not clearly defined as yet, but which appear with ACTH and cortisone administration. One of the most important changes produced is an alteration in the psychic state. Most commonly this is in the form of euphoria. It develops to some extent in the majority of patients and is a part of the happiness and delight over the disappearance of their disease. It is usually of short duration, but in an occasional patient, it may become very disturbing. The change in mental state does not always follow this euphoric pattern. In some patients mental depression may appear. This often takes the form of paranoid delusions. Usually the euphoria or the depression will vanish on withholding treatment. In some patients actual psychoses develop, and in addition to withholding therapy other measures, such as shock treatment, may be necessary.

The serious complication of psychosis may be prevented by observing certain precautions during treatment. The earliest precaution to be taken is the proper evaluation of the patient who is to be treated with ACTH or cortisone. In the presence of a basic psychoneurotic pattern or emotional instability it is probably wise whenever possible to withhold ACTH or cortisone treatment. In those instances, however, in which it is necessary to use these agents, the earliest evidence of abnormal behavior should be regarded as a warning signal and treatment should be stopped. Often the patient describes a state of being bothered by several independent unrelated trains of thought, none of which he can concentrate on or carry to completion. It is often so disturbing that the patient becomes anxious and has insomnia. This may go on to the development of hallucinations, usually visual, occasionally aural, and severe mental depression. In some instances it has been possible to associate mental changes with marked electrolyte alterations due to excessive sodium retention and cerebral edema or hypopotassemia. It is wise to be on the alert for the possibility of these biochemical changes before concluding that the cause of the mental disturbance is due to the hormones per se. In some

4. Hill, S. R., Jr.; Reiss, R. S.; Forsham, P. H., and Thorn, G. W.: The Effect of Adrenocorticotropin and Cortisone on Thyroid Function: Thyroid-Adrenocortical Interrelationships, J. Clin. Endocrinol. **10**:1375-1400, 1950.