TABLE 2

COMPARISON OF VARIOUS STAND ESTIMATES*

	Mean, untransformed data	Mean, transformed data	Median
Spruce-fir forest type			
Plots, tenth-acre	218.5	—	227.4
Plots, fortieth-acre	293.7	247.8	243.2
Plotless samples	203.5	—	207.0
Random pairs	422.6	240.4	206.5
Deciduous forest type			
Plots, tenth-acre	171.4	—	162.5
Plotless samples	165.8	—	157.5
Random pairs	238.0	154.0	169.5

* Expressed in square feet basal area/acre.

in the markedly improved agreement of stand estimates illustrated in Table 2. Medians are included to show their close agreement with each other and with the more reliable of the means. They offer a promising evasion of the labor of transformation if the utmost statistical efficiency (*4*) is not required.

It is evident that conventional statistical treatment of small samples (one-fortieth acre or less) yields biased stand estimates, at least in the Appalachian vegetation. In the examples cited, this bias was reduced or eliminated by a logarithmic transformation, which validated the use of standard statistical procedures with random-pair and other small-sample data.

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On the Metabolism of Reichstein's Substance S

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It is an established fact that there must be an adrenal precursor to urinary androsterone and etiocholanolone because these compounds are excreted by castrates. For theoretical reasons Dobriner (*1*) has postulated that this precursor might be 11-desoxy-17-hydroxy corticosterone (Reichstein's substance S) because this substance is known to be present in the adrenals and has no oxygen function at C-11.

A generous gift of substance S from the Glidden Co. has enabled us to perform some metabolic experiments in humans. Previously Conn (*2*) has administered 400 mg of substance S to human subjects and achieved a great increase in urinary 17-ketosteroids, but he gives no information about the nature of these steroids. With the aid of a somewhat modified chromatographic separation technique according to Zygmuntowicz (*3*), we have registered the urinary excretion pattern of 17-KS before and after substance S was given to 4 patients and have analyzed the different fractions by infrared spectrography. First we gave 200 mg of substance S per os as the free alcohol but could not find any change in either the total amount of 17-KS or their relative amounts. In two cases, however, when we administered 300 mg of substance S as the monoacetate by the same route, we noticed in one case a small and in the other one a large increase in the 17-KS excretion. By infrared spectrography of the fractions in the 17-KS microchromatogram (Fig. 1) we made the following interesting observations. The tremendous increase in the fractions 18–30 is largely due to etiocholan-3α-ol-17-one. Androsterone is present but in a very small amount compared to the etiocholanolone. It is not possible to say with certainty whether there is an increase in androsterone excretion or not. The total increase in 17-KS excretion above the mean value before the administration of substance S was 60 mg, which is 27% of what could be formed stoichiometrically from the given amount of substance S-acetate.

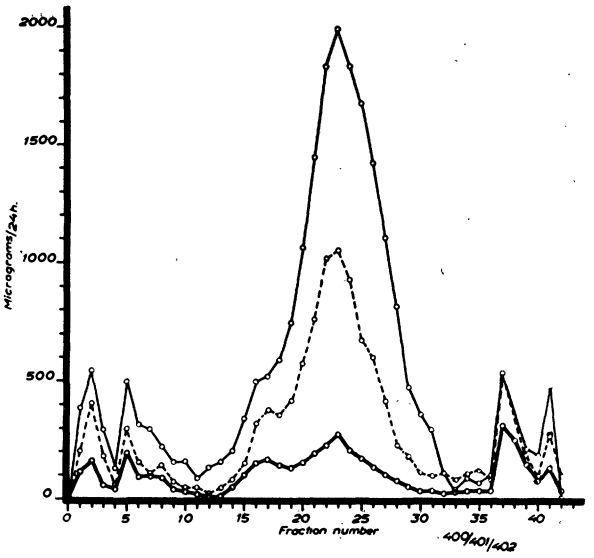

FIG. 1. Case P. T. ♀ Age: 50. Normal. Treated with 300 mg substance S-acetate per os. Heavy solid line: Before treatment (17-KS 4.4 mg/24 hr). Dash line: 1 day after treatment (17-KS 12.2 mg/24 hr). Light solid line: 2 days after treatment (17-KS 22.6 mg/24 hr).

It is of course too early to draw any conclusions concerning the significance of these experiments, but they suggest that substance S might be the precursor of at least some of the etiocholanolone which has its source in the adrenals. Research is being continued.

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