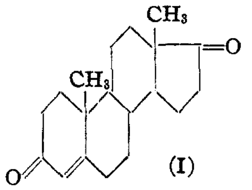
constitution which exhibits the relationship between rat-tests and capon-test potency characteristic of testicular extracts. The natural expectation that this observation would prove significant in the elucidation of the constitution of the testicular hormone was fulfilled with surprising promptitude.

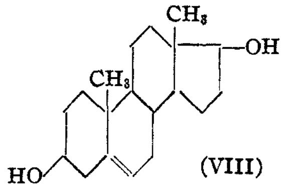
Laqueur, *et al.* [*Z. physiol. Chem.*, **233,** 281 (1935), appearing on June 7] described the isolation of a testicular hormone of unknown constitution (m. p. 154°), with a capon activity of about 10 γ, which was called testosterone (VI). Although (VI) showed the characteristic difference in capon-test and rat-test effectiveness, the published figures do not permit a rigorous comparison with (I).

At London, Laqueur expressed the opinion, based on chemical evidence, that (VI) is an isoandrosterone. The physiological activity of (I) suggested further investigation of (VI) and we have recently learned by private communication from Prof. Laqueur that (VI) yields (I) upon oxidation. Therefore it appears highly probable that formula (II) is that of testosterone (VI).

In pursuance of the program outlined in our paper (*loc. cit.*) we reduced androstene-3-ol-17-one (VII) with sodium and alcohol to androstene-3,17-diol (VIII), m. p. 175–178° corr. Utilizing the greater reactivity of the 3-substituent we partially oxidized the dibromide of (VIII) to produce (II) upon subsequent debromination. We also partially saponified the diacetate of (VIII) to produce the 17-monoacetate, which, upon oxidation of its dibromide and debromination, should yield the acetate of (II).



(I)



(VIII)

Further details will be published elsewhere, and we hope that the previous announcement of our research program (*loc. cit.*), together with the work initiated before the isolation of testosterone, may serve as a reservation of this project.

Footnote (*Sept. 7*).—At the time this note was written the author was unaware that testosterone (androstene-3-one-17-ol) had already been synthesized in his laboratory in Zürich by his assistants. The substance was made by partially saponifying the unsaturated diol diacetate and oxidation of the monoacetate dibromide.

GEORGE HERBERT JONES LABORATORY L. RUZICKA
UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS

RECEIVED AUGUST 20, 1935

EXPERIMENTS ON THE CONSTITUTION AND PREPARATION OF THE TESTICULAR HORMONE

Sir:

In the preceding Communication of L. Ruzicka it is evident from the dates given that the publication of his experiments on the preparation of androstendione-3,17 antedates the publication of our experiments on the preparation of this same compound. However, we would like to state that the particular issue of the *Helv. Chim. Acta* to which reference is made was not received in our library until August 8, three days after the publication of our experiments, and that a sample of dehydroandrosterone prepared by our method (received by THIS JOURNAL, June 4) was sent to Professor Butenandt on May 20. We were unaware, therefore, of Professor Ruzicka's experiments, and our suggestion as to the constitution of the testicular hormone and our experiments on its preparation were made independently. At the time of the appearance of his article in the *Helv. Chim. Acta* we were engaged in the preparation of 17-hydroxy-androsten-one-3, and we had succeeded in preparing androstendiol (m. p. 175°), and its diacetate (m. p. 159°) by the reduction of our synthetically prepared dehydroandrosterone when the above Communication reached us. In view of Professor Ruzicka's Communication, and of his request that this project be reserved we are discontinuing our work in this particular direction.

FRICK CHEMICAL LABORATORY EVERETT S. WALLIS
PRINCETON UNIVERSITY E. FERNHOLZ
PRINCETON, N. J.

RECEIVED SEPTEMBER 23, 1935

THE PREPARATION OF β-CHLOROVINYLARSINE SULFIDE

Sir:

β-Chlorovinylarsine sulfide was first described by Lewis and Stiegler [THIS JOURNAL, **47,** 2546 (1925)] as a clear, amber-colored plastic mass insoluble in the usual solvents other than carbon disulfide and possessing an extraordinarily irritating and noxious odor.

We have succeeded in obtaining this substance, β-chlorovinylarsine sulfide, in a crystalline condition by the following procedure. Hydrogen sulfide was conducted for two hours through a solution of 45 g. of β-chlorovinyldichloroarsine (b. p. 78° at 12 mm.) in 50 cc. of alcohol. The solution became noticeably warmer and a yellow