in converting such a precursor to purines. It appears therefore that this coenzyme functions in combining a single carbon unit into the pyrimidine ring.

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RECEIVED MARCH 5, 1947

PARTIAL HYDROLYSIS OF SILICON TETRACHLORIDE

Sir:

The existence of an homologous series of silicon oxychlorides of the general formula $Si_nO_{n-1}Cl_{2n+2}$ was established, and the first seven members isolated and identified in 1941 by Schumb and Holloway.[1] Single members, including the cyclic tetramer, $Si_4O_4Cl_8$, had also been prepared by others by various means,[2,3,4] but the method referred to[1] gave a complete series of homologs which were separable by distillation.

More recently it was mentioned in a review article[5] that the first two members of the series of oxychlorides had been prepared in this Laboratory by the partial hydrolysis of silicon tetrachloride in dilute, anhydrous diethyl ether solution by means of addition of moist ether, according to the equations

$$2SiCl_4 + H_2O = Si_2OCl_6 + 2HCl$$
$$3SiCl_4 + 2H_2O = Si_3O_2Cl_8 + 4HCl$$

Half a mole of silicon tetrachloride was dissolved in about 200 g. of anhydrous ether in a three-necked flask immersed in ice water. One quarter mole of water measured from a buret was separately dissolved in the minimum amount of anhydrous ether (about 350 g.). The wet ether was introduced by means of a separatory funnel, into the silicon tetrachloride solution at a rate of about two drops a second, with constant stirring.

There was no observable change within the flask during the reaction, but on standing overnight a very small deposit of a white solid, presumably silica, accumulated in the flask. The ether was evaporated off on a steam-bath, leaving about twenty milliliters of oily residue. This oil was fractionated at a pressure of fifteen mm. Two of the fractions were analyzed gravimetrically for chloride.

Fraction	Boiling point, °C.	%Cl Found	Calculated
II	50–53	76.69	76.76 for Si_2OCl_6
III	75.5–76.5	70.90	70.94 for $Si_3O_2Cl_8$

Better yields of higher boiling residue were obtained when the reaction was carried out at the temperature of solid carbon dioxide.

All attempts to carry out the partial hydrolysis of silicon tetrachloride in the vapor phase were unsuccessful.

The partial alcoholysis of $SiCl_4$ in ether solution with ethyl alcohol has also been accomplished in a similar manner, to give the following compounds.

Compound	Boiling point, °C.	%Cl Found	%Cl Calculated
$C_2H_5OSiCl_3$	102–104	58.83	59.28
$(C_2H_5O)_2SiCl_2$	137–138	37.59	37.52
$(C_2H_5O)_3SiCl$	156.5	17.53	17.86

Similar reactions with ammonia, dihydric alcohols, such as ethylene glycol, and hydrogen sulfide, in place of water, are to be attempted, as well as the partial hydrolysis, thiohydrolysis, ammonolysis, and alcoholysis of other non-metal halides, such as boron trichloride.

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W. C. SCHUMB A. J. STEVENS

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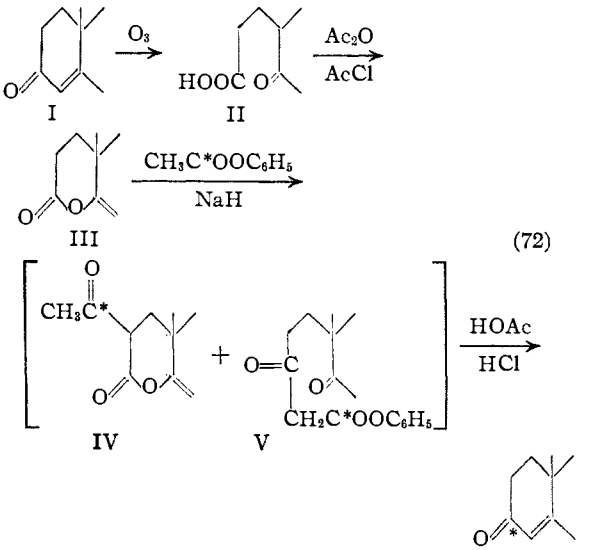
RADIOACTIVE CHOLESTENONE[1]

Sir:

In connection with recent studies of the intermediary metabolism of the steroid hormones and the relation of these substances to various forms of cancer,[2] a method has been devised for the preparation of steroids containing isotopic carbon in ring A. Cholestenone was used as a model in the following series of reactions in which C^{14} was employed.



The yield of keto acid II obtained by ozonization of cholestenone (I) was considerably im-

(1) Schumb and Holloway, THIS JOURNAL, **63**, 2753 (1941).

(2) Friedel and Ladenberg, *Compt. rend.*, **66**, 539 (1868); *Ann.*, **147**, 355 (1868).

(3) Troost and Hautefeuille, *Bull. soc. chim.*, [2] **13**, 213 (1870); **16**, 243 (1871); **19**, 255 (1873) **35**, 360 (1881); *Ann. chim. phys.*, [5] **7**, 452 (1876).

(4) Rheinboldt and Wisfeld, *Ann.*, **517**, 197 (1935).

(5) Schumb, *Chem. Rev.*, **31**, no. 3, 590 (1942).

(1) This work was supported by funds provided by the American Cancer Society on the recommendation of the Committee on Growth of the National Research Council.

(2) (a) Dobriner, *et al.*, *Science*, **99**, 494 (1944); (b) Heilman and Kendall, *Endocrinology*, **34**, 416 (1944).