cyanate and isocyanate, but it is not known which of these was produced.

Anal. Calcd. for $Ge(OCN)_4$: Ge, 30.17. Found: Ge, 30.35.

Germanium (iso)cyanate is a colorless liquid which rapidly hydrolyzes to germanium dioxide. A vapor pressure study, using the isotensiscopic method already described,[3] showed that thermal decomposition occurs slowly above 140°. The equilibrium vapor pressure values for the range 35 to 140° are expressed satisfactorily by the equation

$$\log_{10} p = 8.77 - \frac{2764}{T}$$

B. p. (extrapolated), 196°; molar heat of vaporization, 12.6 kcal.; m. p. −8°; density 24° (pycnometric), 1.7694; $n^{25}D$ 1.4793.

(3) Laubengayer and Corey, *J. Phys. Chem.*, **30**, 1045 (1926).

DEPARTMENT OF CHEMISTRY
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RECEIVED APRIL 17, 1943

Two New Thionacetophenetides

o-Thionacetophenetide was prepared in 26% yield by adding 18 g. of *o*-ethoxyphenyl isothiocyanate in ether to methylmagnesium iodide, from 32 g. of methyl iodide, 9 g. of magnesium turnings and 90 ml. of dry ether, refluxing for three hours, hydrolyzing and recrystallizing the resulting solid from 25% acetic acid, m. p. 70–71°. *Anal.* Calcd. for $C_{10}H_{13}NOS$: N, 7.17; S, 16.42. Found: N, 7.01, 7.14; S, 16.62, 17.34.

m-Thionacetophenetide was prepared in a similar manner and melted at 89–90°. *Anal.* Found: N, 6.90, 7.09; S, 17.26, 16.53.

We also prepared and analyzed *p*-thionacetophenetide and our melting point agrees with that of recent workers[1] rather than with that of Sachs and Loevy.[2]

(1) Worrall, THIS JOURNAL, **46**, 2838 (1924); Kiprianov, Suitnik and Suich, *Chem. Abs.*, **30**, 4863 (1936); *J. Gen. Chem.* (U. S. S. R.), **6**, 42–9 (1936).

(2) Sachs and Loevy, *Ber.*, **37**, 876 (1904).

SCHOOL OF CHEMISTRY
RUTGERS UNIVERSITY LOUIS E. PERLGUT
NEW BRUNSWICK, N. J. D. L. COTTLE

RECEIVED JULY 12, 1943

COMMUNICATIONS TO THE EDITOR

LONG X-RAY DIFFRACTION SPACINGS OF THE KERATINS

Sir:

Recently, with techniques previously employed to determine the large fiber-axis period of collagen (640 Å.),[1] the following data were obtained for porcupine quill (α) and feather (β) keratins.

MERIDIONAL AND NEAR-MERIDIONAL REFLECTIONS

Porcupine quill tip			Feather rachis		
I	II	III	I	II	III
66	3	198	23.6	4	94.4
49	4	196	11.9	8	95.2
39	5	195	10.45	9	94.1
27.4	7	192	6.30	15	94.5
24.5	8	196	5.53	17	94.0
22.0	9	198	4.98	19	94.6
19.8	10	198	4.45	21	93.5
18.06	11	197.8	Layer-line reflections		
15.2	13	198	with k values of 2 and 4		
13.2	15	197	to 13, inclusive, have		
12.36	16	197.8	been observed on the		
10.40	19	197.6	feather patterns		

I, Bragg spacing, in Å.; II, order no., k; III, k times spacing, in Å.

The low values listed in several instances result from considering meridional and near-meridional arcs together. This is unavoidable at present with porcupine quill patterns, since prominent large-spacing (83 Å.) layer-line components cannot be resolved satisfactorily, except on the equator, because of lateral diffuseness and lack of perfect orientation. The situation is better with feather, whose patterns show a strong, easily resolved row line indicating an important 34 Å. spacing transverse to the fiber axis.

In meridional directions on the patterns of both materials sharpness facilitates good resolution. The third order of porcupine quill and the fourth of feather are strongest and innermost in each case, and probably represent important structural features in the directions of the fiber axes.

The evidence clearly indicates fiber-axis periods of 198 and 95 Å., respectively, for porcupine quill and feather. On the eve of publication of these conclusions MacArthur[2] reported that periods of either 198 or 658 Å. are possible for porcupine quill, although the larger figure was favored and has been the only one anticipated previously.[3] It is impossible to deny categorically that periods

(1) R. S. Bear, THIS JOURNAL, **64**, 727 (1942).

(2) I. MacArthur, *Nature*, **152**, 38 (1943).

(3) See W. T. Astbury, pp. 88–96 in "Advances in Enzymology," Vol. III, Interscience Publishers, Inc., New York, N. Y., 1943.