thermocouple and the leads brought to the cold junction in an unbroken length. This has a two-fold effect, it reduces the temperature drop across the furnaces and avoids thermal e.m.f. errors at any intermediate point in the thermocouple leads. This thermocouple was located in such a position that the tip of the specimen actually lies inside the ring; the thermal characteristics of the camera were then determined using silver as the standard so that the specimen temperature was known to within 2 °C.

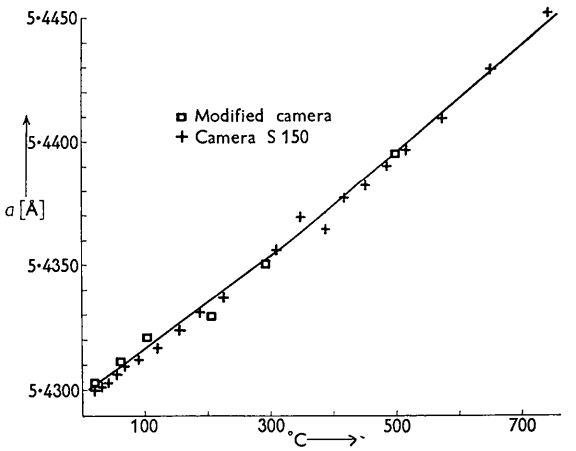

Fig. 1. The thermal expansion of silicon.

The second camera, a somewhat older type, was modified in a similar manner to that recommended by Berry, Henry & Raynor (1951).

The lattice parameter at 25 °C., corrected for refraction, was 5·43035 Å in reasonable agreement with the average parameter (5·43054 ± 0·00017 Å) obtained by the project. The coefficient of thermal expansion was found to vary from $3{\cdot}13 \times 10^{-6}$ at 25 °C. to $4{\cdot}45 \times 10^{-6}$ at 700 °C. as compared with the value of $4{\cdot}2 \times 10^{-6}$ between 10 and 50 °C. (Straumanis & Aka, 1952) assumed in the project for correction to the standard temperature of 25 °C. and the value of $2{\cdot}42 \times 10^{-6}$ between 20 and 50 °C. obtained by Erfling (1942) from macroscopic measurements.

The lattice parameter data were fitted by the method of least-mean-squares to the line.

$$a_t = 5{\cdot}429788 \pm 0{\cdot}000139 + (1{\cdot}6747 \pm 0{\cdot}1057) \times 10^{-5}t + (5{\cdot}315 \pm 1{\cdot}533) \times 10^{-9}t^2,$$

where t is in °C.

The results are shown plotted in Fig. 1.

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Crystallographic data for the α and β Isomers of 4-hydroxy-2:2:6-trimethylpiperidine.

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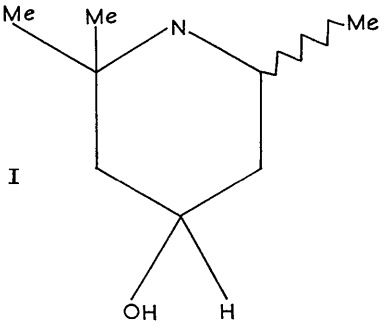
(*Received* 25 *April* 1961)

The isomers of 4-hydroxy-2:2:6-trimethylpiperidine have the formula $C_8H_{17}ON$ and the constitution I, but no definite assignment of configuration has yet been made. Both isomers were supplied as (±) mixtures.



I

α-isomer (M.Pt. 137–8 °C.)

Good crystals were obtained with some difficulty from benzene. They were colourless, transparent, monoclinic laths, elongated along [100] with (010) prominent, and (001) and (011) also present.

A full survey of the reciprocal lattice was carried out using a stationary-film single-crystal camera and Cu $K\alpha$ radiation. This gave the results listed in the table below. The density was measured by flotation.

β-isomer (M.Pt. 160–1 °C.)

This was available only as colourless, transparent, platey fragments, the principal face being (001). The crystallographic data for this isomer were found in the same way and are also given in the table.

	α-isomer	β-isomer
a	$7{\cdot}6_8$ Å	$7{\cdot}7_3$ Å
b	$9{\cdot}4_5$	10·1
c	12·3	11·3
β	107°	110°
D_o	1·10 g.cm.$^{-3}$	1·15 g.cm.$^{-3}$
D_c	1·11	1·15
Z	4	4
Space group	$P2_1/c$	$P2_1/c$

The space group was determined uniquely from the systematic absences.

Detailed studies of these isomers are planned, with the object of determining both the configuration and conformation of each.

I am indebted to Dr F. Perks for suggesting this problem and supplying the specimens, and to Dr D. Rogers for guidance and encouragement.