in a series of exposures between each of which the crystal was turned 10′. The total errors in crystal positions lead to $\Delta\theta = 5'$. No significant errors were to be found in the eccentricity and graduation of the circular scale. The difference between $\theta_{15,0,\bar{15}}$ and $\theta_{\bar{15},0,15}$ was only 2′.

The following direct lattice elements were obtained:

$$a = 14{\cdot}95 \pm 0{\cdot}02,\quad b = 7{\cdot}54 \pm 0{\cdot}03,\quad c = 15{\cdot}80 \pm 0{\cdot}02\ \text{Å};\quad \beta = 102^\circ\ 13' \pm 7'.$$

They were measured with both Cu $K\alpha_1$, and Cu $K\alpha_2$ radiations. The agreement is very good: the differences are smaller than the theoretical errors obtained with $\Delta\theta = 5'$.

The equatorial vectors chosen have approximately the directions of a, c and the normal to the bisector of β^*. Owing to this, the errors in the direct cell constants are of the same order of magnitude as the measured reciprocal vectors.

Systematic extinctions were found for $h0l$ reflexions with $h+l$ odd and for $0k0$ reflexions with k odd. The space group is thus $P2_1/n$, in agreement with the absence of a piezoelectric effect. (We are indebted to Mr J. Baecklund for the use of his apparatus.)

The density was determined by the flotation and the pycnometric methods, both of which gave 1·89±0·02 g.cm.$^{-3}$. On the basis of eight formula units per unit cell the calculated density is 1·89 g.cm.$^{-3}$. The number of formula units in the unit cell indicates that there are either two non-equivalent molecules or a dimeric molecule in the crystalline state. A complete crystal-structure determination has been started at this Institute.

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Unit cell and space group for sodium tetraborate, $Na_2O.4B_2O_3$.

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Morey & Merwin (1936) have reported two modifications of sodium tetraborate. The stable modification at high temperatures separates at 816° C. from a melt of the stoichiometric composition $Na_2O.4B_2O_3$. Single crystals suitable for X-ray work were grown in a platinum crucible at 700° C. from a melt containing an excess of boron oxide. X-ray powder patterns established these crystals as identical with the phase crystallizing at 816° C. from the melt of stoichiometric composition.

Oscillation and Weissenberg exposures around three axes revealed a monoclinic symmetry. The following dimensions for the unit cell were found:

$$a = 6{\cdot}50,\quad b = 17{\cdot}80,\quad c = 8{\cdot}37\ \text{Å},\quad \beta = 96{\cdot}5^\circ.$$

These figures are estimated to be accurate within 0·5%. With four $Na_2O.4B_2O_3$ in the unit cell, the calculated density is 2·35 g.cm.$^{-3}$. A density of 2·32 g.cm.$^{-3}$ was observed by the flotation method.

Systematic extinctions were observed only in the $0k0$ reflections, the extinctions occurring for $k = 2n+1$. This is compatible with the space group $P2_1$ or $P2_1/m$.

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The crystal structure of urea phosphate.

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A preliminary analysis, in this laboratory, of the crystal structure of urea phosphate, $OC(NH_2)_2.H_3PO_4$, has been reported by Sundera-Rao & Pepinsky (1954). That analysis was based upon (010) and (001) projections. Indications of a very interesting hydrogen-bond system prompted a complete three-dimensional study. Some results of the complete analysis are reported here.

The crystals are orthorhombic with

$$a = 17{\cdot}68,\quad b = 7{\cdot}48,\quad c = 9{\cdot}06\ \text{Å};$$

the observed density is 1·770 g.cm.$^{-3}$. With $Z = 8$ molecules per unit cell, the asymmetric unit contains one $OC(NH_2)_2.H_3PO_4$. Systematic extinctions indicate space group *Pbca*.