Note for talk at Brooklyn work

for Thursday Sept. 30th 1954.

Introduction

limited to ribonucleic - not collagen, plan viruses, or gonin.

my work on ribonucleic - brief mention of other work
(no other & many works)

General picture - 3D Patterson

= isomorphous replacement studies.

3D Patterson

Mag, Hz, & Crick.

data collected by others - moderately accurate. (errors increase with z)

computed by Hodcroft on I.B.M. machines. (orig removed)

Average intensity curve: shows how to a peak.

Plotting of the Patterson - Viterbo's method.

Each contour (assuming Fmax value = 100 electron/A^3.

S & A not well nor complete isotropic.

Mirror plane effect: show section: give explanation.

not enhanced precision is due to coherence of the vectors
Fluorescent reactivity: second molecule is not near x = z = 0.

Molecular location: plotting humps.
(can be done by holding the emulsion).

Roots: no roots anywhere.

Sequence of humps in the c direction:

1. Very high (length 35 Å)
2. Others in other direction (remember relative weighting)

Mean "red" direction = Elliott "red-red" direction.
(also shown in Appendix 1 of the SA collection).

Ribonucleic VI (Magee & Circle)

Grown using dye to iodo-phenol blue (previously blank).

Coloured deep blue: highly pleochroic when viewed along c*.

Strong absorption where d'ne occur II to be:

| Plane of dye | ||
|--------------|---------|
| Plane of dye | ||

Space group: la 5 c b vol.

Cell dimensions:  

<table>
<thead>
<tr>
<th>Space group</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>β</th>
<th>Vol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>70.60</td>
<td>35.99</td>
<td>51.65</td>
<td>90.96</td>
<td>135,000</td>
</tr>
<tr>
<td>P21</td>
<td>30.28</td>
<td>38.37</td>
<td>53.16</td>
<td>90.83</td>
<td>59,400</td>
</tr>
</tbody>
</table>

Pattern of holl's: superposition (show slide)

(omit discussion of single region) 2 companion pSafe (copy same page).
Assume screw did remain the same.

Length of ribonucleic RNA due to a in A 280

Also 501 #. O nm we can simply locate molecule.

Accuracy and Shrinkage (Magdoff & Godd)

Background: variability of ribonucleic chains.

How large & heavy atom? - depends on accuracy.

Adding dye, not detailed here: Accuracy investigation.

Found fluctuation in intensity.

(Shouler limited to the hole)

Spectrometer: - check on line profile.
- Absorbance correction.

General performance appears to be satisfactory.

Two similar crystals (so, tertiary skeletal)

(checked pairs, factor the same)

Plotted \( d = \frac{2(|I-I'|/2)}{2} \) for groups.

Calculated \( \sqrt{\frac{4c}{A}} \), allowing for background.

Changes due to solvent: cell dimensions.

Fig 3. tert-butyl alcohol vs ethyl alcohol.

Fig 4. - vs monovacch.

Fig 5. - vs dye.
80, Shrinkage effect

Study of how adjacent reflection 80g and 80f

80g 80f (initially 4300 3700)

Milk cold jet at top 5300 1600

Small jet near caesalpin: depended upon speed of rotation

In one case could be done by the knee of the hand.

Natural variances: 2300 3600 3500 2900 3600 2700 counts.

Shark for all crystals of n60. It studied.

For 80g... 80f showed the use steady rate less change than 1st local.

Quantitative work: wet v damp... Fig 6.

Large jet... all dimensions... wet 30.49 53.20 105.96°

Damp... 30.17 52.96 106.03°

\[
\begin{align*}
\alpha & = 32^\circ \\
\beta & = 0° \\
\end{align*}
\]

Broad strip of reflection: (normal peak width 28 for 30° 9.64. 12,500

Slightly shaded 9.24. 8,300

Stronger further. 9.42. 3,500
Patteren: very much near cajus.
- chiefs appear somewhat greater than a beating charge.
- mobs may rotate slightly, then as an interruption.

3-1 date: impossible - fig. 7.

Photographic date: given as an average.

Test:
1. measure all dimensions very accurately.
2. move crystal over and/or use lense jet.
3. consider for dense capillary absorption.

Implication: corresponds to 30-400 per person ml. or 50-750 per person ml.

β - lactoglobuline
Theory (Crick & Magdoff)

Preliminary results only:

- 3D v. 2D?
- How heavy an arm?

Results:

\[
\frac{\alpha}{\beta} \leq 2 \sqrt{\frac{n}{N}} \frac{f_x}{f_p} \\
\leq \sqrt{2} \sqrt{\frac{n}{N}} \frac{f_x}{f_p}
\]

(Define $N$ and $n$)

Heavy arm peak

General RMs background

- For near 3D Patt. \[ \frac{\sqrt{m_3} \frac{f_x}{f_p}}{2Nf_p} \leq \frac{\sqrt{m_3} \frac{f_x}{f_p}}{2Nf_p} \]

Peak keeps

RMs (ubiquitous)

- For difference 3D Patt. within errors \[ \frac{\sqrt{m_3} \frac{f_x}{f_p}}{\sqrt{Nn} f_p} \]

- For 2D (AF) Patt. \[ \frac{\sqrt{m_3} \frac{f_x}{f_p}}{\sqrt{Nn} f_p} \leq \frac{1}{2} \]

\[ \bar{m}_1 \]

Ratio of last two cases: \[ \frac{3D \text{ current}}{2D \text{ current}} = \frac{\sqrt{m_3}}{2m_2} \bar{p} \]