

the computing associated with this work was supported by Research Grant (RC-5412) from the Public Health Service, National Institutes of Health, and (G-7395) from the National Science Foundation. We are grateful to the Ciba Pharmaceutical Products, Inc., for a graduate student fellowship.

### References

- BARTLETT, M. F., DICKEL, D. F. & TAYLOR, W. I. (1958). *J. Amer. Chem. Soc.* **80**, 126.  
 CRUICKSHANK, D. W. J. (1949). *Acta Cryst.* **2**, 65.  
 CRUICKSHANK, D. W. J. (1950). *Acta Cryst.* **3**, 72.  
 CRUICKSHANK, D. W. J. (1954). *Acta Cryst.* **7**, 519.  
 DICKEL, D. F., HOLDEN, C. L., MAXFIELD, R. C., PASZEK, L. E. & TAYLOR, W. I. (1958). *J. Amer. Chem. Soc.* **80**, 123.  
 HENRY, T. A. (1949). *The Plant Alkaloids*. London: Churchill.  
 JEFFREY, G. A. & SHIONO, R. (1959). *Acta Cryst.* **12**, 447.  
 PRZYBYLSKA, M. & AHMED, F. R. (1958). *Acta Cryst.* **11**, 718.  
 SHIONO, R. (1957). IBM 650 Program for Differential Fourier Synthesis and Structure Factors, Technical Report No. 2, University of Pittsburgh Computation and Data Processing Center.  
 SHIONO, R. (1958). Technical Report No. 9, University of Pittsburgh Computation and Data Processing Center.  
 SHIONO, R. (1960). Technical Report No. 16, University of Pittsburgh Computation and Data Processing Center.  
 TEMPLETON, D. H. (1957). Report on Computing Conference on use of IBM 650 programs, *Acta Cryst.* **10**, 384.

### Short Communication

*Contributions intended for publication under this heading should be expressly so marked; they should not exceed about 500 words; they should be forwarded in the usual way to the appropriate Co-editor; they will be published as speedily as possible; and proofs will not generally be submitted to authors. Publication will be quicker if the contributions are without illustrations.*

*Acta Cryst.* (1960). **13**, 564

**Observations on Chayes' discussion of the intermediate plagioclase feldspars.** By HELEN D. MEGAW, *Crystallographic Laboratory, Cavendish Laboratory, Cambridge, England*

(Received 3 December 1959 and in revised form 9 February 1960)

Chayes (1958) has propounded a tentative hypothesis that the positions of the subsidiary reflexions (*e* type maxima) in the intermediate plagioclase feldspars may depend on average run lengths in Si and Al atoms, that is, on the average numbers of consecutive atoms of the same kind in tetrahedral sites. He seeks a relation between these and the observed quantities  $\delta_c$ , the displacements of the layer lines of *e* type maxima (on oscillation photographs about [001]) from the nearest layer lines of principal or *a* type maxima; these displacements may alternatively be defined as the differences of reciprocal-space coordinates (in angular measure) along  $c^*$ . It appears to be implied, though not explicitly stated, that the relation is expected to take the form

$$360/\delta_c = E', \quad (1)$$

where  $E'$  is the average run length in Si.  $E'$  can be evaluated for the case of complete disorder, since Chayes has shown that its value  $E(\bar{v}_{Si})$  is then mathematically given by

$$E(\bar{v}_{Si}) = 1/\alpha, \quad (2)$$

where  $\alpha$  is the ratio of the number of Al atoms to the total number of tetrahedral atoms. When a graph is drawn using the values of  $\delta_c$  measured by Gay (1956) it is shown that a reasonable (not perfect) fit is obtained for

$$360/\delta_c = E(\bar{v}_{Si}). \quad (3)$$

Chayes comments: 'To a remarkable extent the 'repeat distance' calculated from the  $\delta_c$  spacing behaves as if it were governed by the same rules which determine average

run lengths in a run sequence characterized by short-range disorder'. This, which strictly only says that both are inversely proportional to the composition parameter  $\alpha$ , might be taken as a claim that the graph of (3) provides evidence tending to support (1), or even predicts the form of (1) (which has never been explicitly stated), as well as allowing an estimate of the state of order. It is important to realize that this is not true, which can be shown as follows.

Suppose we start with the very much simpler hypothesis,

$$\delta_c/360 = \alpha, \quad (4)$$

which assumes the displacement, in cycles, to be equal to the relative number of Al atoms, *irrespective of their degree of order*. This gives

$$360/\delta_c = 1/\alpha, \quad (5)$$

which is identical with (3) except for the labelling of one axis, and must therefore fit the experimental results equally well. Admittedly it is empirical as it stands, but it is so much simpler than (1), and without the need for any accessory postulates about order, that it would require strong theoretical reasons in favour of (1) to allow the latter any weight in the absence of direct independent evidence for it. In other words, any reasons for belief in (1) must come from considerations other than the empirical fit with experimental results shown in the graph, which can be accounted for more easily without it.

Chayes mentions experiments (Abelson, 1957) in which

he is using optical diffraction to test the hypothesis, but has not reported conclusive results. It would seem from the above quotation, however, that some part of his reason for advancing the hypothesis in this form was due to a misinterpretation of  $\delta_c$ . This quantity is not a reciprocal-lattice 'spacing' but a difference of reciprocal-lattice *coordinates*, and thus its reciprocal has no obvious physical interpretation in direct space, i.e.  $360/\delta_c$  is not of the nature of a 'repeat distance'. It would therefore seem that there is no published evidence at the moment, of any kind, for believing (1) to hold.

Except in so far as (1) is accepted, no conclusions can be drawn about order from this discussion. It may

therefore be fairly said that nothing in this paper of Chayes' can add to our knowledge of the nature and extent of order in the intermediate plagioclase feldspars. That the paper may give rise to misunderstanding on the subject is the reason for this note.

### References

- ABELSON, P. H. (1957). Annual Report of the Director of the Geophysical Laboratory for the year 1956-7. *Carnegie Institute of Washington Year Book* No. 56.  
 CHAYES, F. (1958). *Acta Cryst.* **11**, 323.  
 GAY, P. (1956). *Miner. Mag.* **31**, 21.

*Acta Cryst.* (1960). **13**, 565

## International Union of Crystallography

### Report of Executive Committee for 1959

#### Introduction

Important events during the year under review were the two Symposia held in Leningrad, U.S.S.R., from 21 to 27 May, and the three Conferences in Stockholm, Sweden, from 9 to 12 June.

The Leningrad Symposia were held on the occasion of the 40th anniversary of the death of the great Russian crystallographer E. S. Fedorov; the Academy of Sciences of the U.S.S.R. had invited the Union to participate in this commemoration. The meetings were attended by more than eight hundred crystallographers and other scientists, mainly from the U.S.S.R., and in addition from fifteen other countries. The topics of the Symposia were 'Crystallochemical Analysis and Crystal Chemistry' and 'Electron Diffraction' respectively. Seventeen general lectures were given during five general sessions, and at sixteen section meetings eighty-eight papers of about twenty minutes each were presented. A more detailed report on the Leningrad Symposia, including a list of all speakers and the titles of their papers, has been published earlier in this journal (see *Acta Cryst.* (1959), **12**, 951). (See also *ICSU Review* (1960), **2**, 19).

The Commission on Crystallographic Apparatus organized the Conferences which by invitation of Karolinska Institutet were held in Stockholm. Attendance at these Conferences was limited to a relatively small number of invited speakers and participants actively working in the fields concerned, and consequently only about one hundred persons participated. A second difference from the usual arrangements was that much more time was reserved for the discussion of the papers and subjects. Further details about the meetings are given in the next section.

The Executive Committee wishes to express its sincere gratitude to the Russian and Swedish hosts for the great hospitality received in Leningrad and Stockholm, and to all who collaborated in the organization of the two series of meetings. Generous financial help received from UNESCO through ICSU enabled many participants to attend, and is gratefully acknowledged.

Great activities can also be reported in the field of publications. The size of *Acta Crystallographica* increased

from 909 pages in 1958 to 1067 pages in 1959, without any delay in the publication of the monthly issues. Two volumes of *Structure Reports* appeared in 1959, namely Vol. 14, the supplementary volume and cumulative index for 1940-1950, and Vol. 16 for 1952. Another great event was the appearance of Vol. II of the *International Tables for X-ray Crystallography*. Under the auspices of the Commission on Crystallographic Apparatus a second edition of the *Index of Crystallographic Supplies* was published.

The Executive Committee of the Union held its statutory intermediate meeting in Leningrad on 20, 21 and 22 May. The more important items of business were summarized in the above-mentioned report on the Leningrad Symposia. Other bodies meeting in 1959 were the Commissions on Crystallographic Data, on Electron Diffraction and on *Structure Reports* (in Leningrad in May), the Commission on Crystallographic Apparatus (in Stockholm in June), the Programme Committee for the Fifth International Congress (in England and in Leningrad), and the *ad-hoc* Committee on Computing Methods (in Paris in June).

In Table 1 the Adhering Bodies of the Union are listed along with the names and addresses of the Secretaries of the National Committees. In this list four prospective Adhering Bodies (for Argentina, Israel, Poland and New Zealand) are included; their applications for adherence will be presented to the Fifth General Assembly. The memberships of the National Committees for Crystallography are given at the end of this Report.

More details about the activities of the Commissions of the Union are given in the next section.

#### Work of the Commissions

##### *Commission on Acta Crystallographica*

The main event to report on is the change in Editorship. Prof. P. P. Ewald, who had served as Editor since the appearance of the journal in 1948, requested in 1958 to be released from his task by the end of 1959. At its meeting in Leningrad the Executive Committee appointed Prof. A. J. C. Wilson as Editor of the journal to succeed