Zeitschrift, 237, 339 (1931) under the title "Über die Nichtidentität der pflanzlichen Aldehydrase und Mutase".

We used the enzyme preparations of peas and potatoes. No traces of mutase was to be discovered in the purified preparations of potato-aldehydrase.

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April 15.

WE cannot admit Dr. Michlin's claim to have been the first to show the non-identity of aldehyde mutase with aldehyde oxidase. It is well known from the work of Bernheim and others that the aldehydrase of the potato is a completely different enzyme from the aldehyde oxidase of animal tissues and milk (Schardinger enzyme). The fact that the potato aldehydrase has no mutase activity obviously does not show that the mutase and the Schardinger oxidase are distinct enzymes. Dr. Michlin indeed says in the paper referred to: "It has not yet been possible, as far as we know, to separate the mutase from the aldehydrase or Schardinger enzyme, either in milk or in animal tissues or yeasts. Wieland's supposition, based on kinetic considerations, that the mutase and aldehydrase of milk are identical, has once again been established by Wieland and Macrae." Dr. Michlin himself therefore evidently accepted the identification of the mutase with the Schardinger aldehyde oxidase. We have now separated these two enzymes and proved their non-identity.

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Two-Dimensional Crystals of Silicon Pentoxide (Si_2O_5)

IT has been shown recently by me that vitreous silica and pumice, which have been considered up to the present as non-crystalline bodies, yield electron diagrams with surprisingly well-defined rings[1].

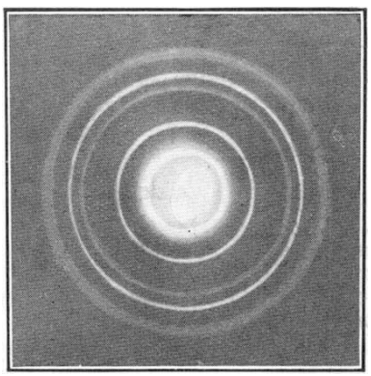

Fig. 1.

Further experiments, which were carried out last year in the Cement Institute, have shown that many other pozzolanic materials yield the same diffraction patterns, the only difference being that the latter did not contain certain rings, which were observed with vitreous silica and pumice. The most striking observation was that exactly the same diffraction pattern was given by every clay, in spite of the low order of symmetry of clay minerals. Such a typical diagram without 'extra' rings is shown in Fig. 1. The following table shows the corresponding Bragg spacings which were found from electron diagrams of some clays and pozzolanes with added pure sodium chloride as a standard substance (a = 5·626 A.).

Intensities	d	a	hkl
20	4·450	5·138	(100)
15	2·561	5·122	(110)
0·5	2·235	5·162	(200)
5	1·688	5·157	(210)
9	1·491	5·165	(300)
3	1·291	5·164	(220)
3	1·240	5·162	(310)
1	1·120	5·173	(400)
0·5	1·028	5·174	(320)
0·5	0·974	5·154	(410)
0·5	0·895	5·167	(500)
0·25	0·858	5·148	(330)
0·25	0·842	5·145	(420)
Traces	0·808	5·195	(510)
,,	0·720	5·195	(520)

It follows from this table that the constant a, which was found by assuming that the lattice is hexagonal, is closely the same for all reflections and that the third index is zero throughout. This last condition indicates that the crystals in question are two-dimensional. The fact that such reflections are all observed also in the case of pure silica glass, suggests that the crystals are constituted only of silica. It follows from this that the bonds between tetrahedra of SiO_4 are here the same as in silicates of mica type and clay minerals, that is, the crystals have the form of endless firm sheets of composition Si_2O_5. This is confirmed by the close agreement of their parameters taken in orthohexagonal co-ordinates: a = 5·161 A. and $b = a\sqrt{3}$ = 8·939 A. with that of some micas and clay minerals. We have, thus, for muscovite, a = 5·17 A. and b = 8·94 A.; for kaolinite a = 5·14 A. and b = 8·90 A.; and for metahalloysite a = 5·15 A. and b = 8·90 A.

The presence of only a few prominent rings in the case of clay minerals, instead of many weak reflections expected by reason of their low symmetry, is readily explained if one remembers that they are unstable at temperatures of 400°–500° C. The effect of cathode rays, which are, of course, partly absorbed by the specimen, would be similar. As to alumina, which is set free at such decomposition, it is probable that it is amorphous, and its influence on the diffraction pattern from Si_2O_5 crystals is as negligible as is that of a celluloid film.

The full account of this work will be published elsewhere.

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[1] Shishacow, N. A., NATURE, **136**, 514 (1935); *J. Tech. Phys.* (*Russ.* **5**, 1834 (1935) *Comptes rendus U.R.S.S.*, **1** (10), 15 (1935).