5. Que l'action de la concanavaline A se traduit par une hyperactivité mannosyl-transférase nette chez les cellules témoins et encore plus manifeste chez les cellules infectées, surtout si la multiplication virale débute avant l'introduction du produit dans le milieu de culture cellulaire. Ce résultat est en très bonne corrélation avec les observations de AUBERY et coll.[9] sur la stimulation des biosynthèses dans les lymphocytes humains, les hépatocytes et les fibroblastes d'embryons de poulet.

Influence de la concanavaline A (50 µg/ml) en culture cellulaire normale et infectée, sur l'activité mannosyl-transférase microsomique, mesurée 4 h après l'inoculation virale. Les résultats sont exprimés en pourcentage d'augmentation d'activité enzymatique par rapport aux témoins

Echantillon	% d'augmentation d'activité mannosyl-transférase microsomique
Cellules saines + concanavaline A	+ 25%
Cellules infectées	+ 30%
Cellules infectées + concanavaline A	+ 28%
Cellules infectées + concanavaline A 1 h après le virus	+ 50%

Summary. Glycoprotein biosynthesis in Arbovirus infected cells, during virus multiplication, mannosyl- transferase activity, on endogenous acceptor, is enhanced. A new glycoproteic class appears. Concanavalin A increases this mannosyl-transferase stimulation.

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[9] M. AUBERY, J. FONT et R. BOURRILLON, Exp. Cell Res. *71*, 59 (1972).

Formation of Polycrystalline Aggregates in Mineral and Biological Systems

Polycrystalline aggregates with varying degrees of preferred orientation are found both in mineral and biological systems, e.g. satin spar and bone. Preferred orientation in mineral aggregates is generally associated with stratas that have undergone flow in the past. The preferred orientation of apatite in bone is generally assumed to result from oriented crystallization on collagen fibres. To explain the observed age–related changes in the preferred orientation of apatite in bone, it has recently been suggested that it is due to alternate stressing and relaxation of the bone during usage[1]. It seems possible that a similar mechanism may also be operative in the case of some mineral systems, e.g. evaporite and a moderate overall stress level will be sufficient.

To test the above suggestions, the reaction of polycrystalline gypsum aggregates to cyclic compression has been studied. Test pieces of polycrystalline gypsum were made from plaster of Paris and water. The test pieces were 6 cm long and 3 cm diameter cylinders, either solid or hollow. The wall thickness of the hollow cylinders was 5 mm. On the upper end of each test piece was placed a metal disc with a 2 mm rim to keep it in place. To protect the cylinder from being worn away by the rim, a piece of adhesive tape was wound round its upper end. The cylinder was then placed on a perspex plate and moist cotton wool was packed round it to prevent drying out during the experiment. In some experiments, a fixed load was placed on the metal disc for the entire period. In other experiments, a 200 g cylindrical load (diameter 15 mm) was mechanically dropped on to the metal disc, from a height of 2 mm, 15 times a minute. The load could be dropped either axially or off-axially on to the metal disc. When an experiment was finished, the gypsum cylinder was dried and a thin wedge-shaped piece was cleaved out at about half height of the cylinder. The 'cutting edge' of the wedge was always normal to the

[1] S. CHATTERJI, J. C. WALL and J. W. JEFFERY, Experientia *28*, 156 1972).

Type of cylinder	Load (g/cm^2)	Period of stressing (days)	Type of stress	Position of the wedge	I max[a] / I min	Remarks
Solid	28	28	Static	Middle	1	Random
Solid	28	14	Axial	Middle	1.5	Small degree of orientation.
Hollow	50	14	Axial	Middle of the wall	2	Small degree of orientation. The degree is uniformed round the circumference
Hollow	50	14	Eccentric	3 cms vertically below the point of impact	3	Fairly high degree of orientation.
Hollow	50	14	Eccentric	Diametrically opposite position to the above sample	1	Random. Same cylinder as the above sample.

[a] I max denotes the intensity maximum in the 020 reflection of gypsum; I min denotes the intensity minimum in the 020 reflection of gypsum

cylinder axis i.e. the direction of compression. The X-ray diagrams of these wedges were taken in a flat-plate camera using MoK α-radiation and 6 cm sample to film distance. The majority of the diagrams showed that 020 and some other reflections of gypsum had intensity variations along the Debye circles. The intensity variation along the circle for the 020 reflection was estimated visually by means of a calibrated intensity scale, and the ratio of maximum to minimum was taken as a measure of the preferred orientation.

The Table shows the types of results so far obtained. A moderate static load produces no preferred orientation within the period studied; whereas a moderate dynamic load does. An off-axial cyclic loading can produce different degrees of preferred orientation at different parts of a cylinder.

Other experiments, not shown in the Table, indicated that the degree of orientation, for a given length of stressing, increases with the higher content of plaster of Paris in the specimen at the beginning of the experiment. Thus alternate stressing seems to be more effective during primary crystallization than later when it requires a recrystallization of the primary crystals.

The observed orientation of the gypsum crystals is such that their *b*-axes are preferrentially oriented parallel with the direction of compression. The reason may be that the preferred habit of gypsum crystal is tabular in the direction of the *ac*-plane, and more or less elongated along the *c*-axis. Crystals in the observed orientation will have less strain and lower solubilities for a given load than those in other orientations. Thus cyclic compression can induce selective dissolution and prolonged exposure to this treatment is likely to lead to the observed preferred orientation in the polycrystalline gypsum mass.

The most interesting result is that an off-axial loading, in spite of the stress distributing metal disc, can produce different degrees of preferred orientation at different parts of a cylinder. These results are similar to those found in human bone where anterior and posterior parts have different degrees of preferred orientation[1] and may have a similar explanation.

Résumé. Afin d'aider à comprendre la forme des agrégats orientés des cylindres de plâtre de Paris durcis ont été soumis à une tension cyclique. L'expérience a permis de constater qu'il est possible d'obtenir un degré différentiel d'orientation dominante autour de la circonférence, comme dans le fémur humain, en soumettant des cylindres creux à des pressions cycliques excentriques.

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16 July 1973.

[2] The author thanks A. Tovborg Jensen and H. E. Lundager Madsen for access to the Laboratory of the Landbohøjskole and their discussion of the manuscript. He also thanks H. C. Jørgensen and P. Nerenst of H+H Industri A/S for their help in designing and carrying out the experiments.
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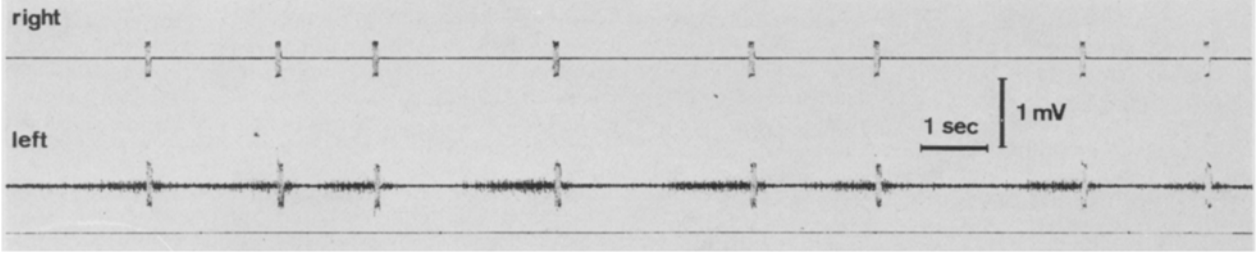
Hypothalamic Self-Stimulation During Light Anesthesia in the Rat

In the classical experimental situation of self-stimulation, an animal presses a lever in order to self-administer 'rewarding' electrical stimuli through implanted brain electrodes. To assess effects of pharmacological depressants or brain lesions on reward or learning capability, the use of lever pressing as the operant response leads to difficulties in interpretation, since perceptual-motor deficits are confounded with possible effects on learning or reward mechanisms. For studying self-stimulation under light anesthesia we used, therefore, electrical muscle activity as a simple operant response.

Bipolar stainless steel electrodes, insulated except across the 0.2 mm tip, were implanted in the lateral hypothalamic area of anesthetized, adult, male albino rats. After recovery from the operation, the animals were tested for self-stimulation by lever pressing (stimulus parameters: 0.1 sec trains of 60–100 Hz sinewaves, 30–80 μA current intensity). In those animals who exhibited self-stimulation, 2 bipolar, tefloncoated electrodes (diameter: 75 μm) with gold-plated tips were implanted in the right and left supraspinatus muscles, using a method described previously[1]. The electrodes were led subcutaneously to the skull and crimped to a connector cemented to the skull. Experiments were started after recovery from the second operation.

[1] J. V. Basmajian and G. Stecko, J. appl. Physiol. *17*, 849 (1962)



Self-stimulation in a rat under light pentobarbital anesthesia (21 mg/kg i.p.). The records show electrical muscle activity recorded from the right and left supraspinatus muscle. Large excursions (stimulus artifacts) indicate onset and duration of rewarding hypothalamic stimuli. Reward was made contingent on high activity in the left concurrent with low activity in the right group of muscles.