observed is readily understandable on the assumption that each crystal contains at least one screw dislocation, by the operation of which growth took place. In such circumstances, the dislocation axis would be normal to the close-packed planes (00.1 face) and centrally located, and the tip of the growth-pyramid would be the point most readily attacked by solvent. The process of removal of atoms from the edges would result at first in an inverted conical hollow and eventually in a hole. The remarkable roundness of the hole, especially after extensive etching, does not necessarily depend on a screw dislocation property. Indeed, many of the holes observed are considerably larger than the expected size of the critical nucleus. We wish to emphasize only that the initiation of the holes occurs at the dislocation.

Since an etched hole in AlB_2 is shown to be connected with a screw dislocation originally, it is suggested that selective etching techniques may be an additional help to a study of the occurrence and the properties of screw dislocations.

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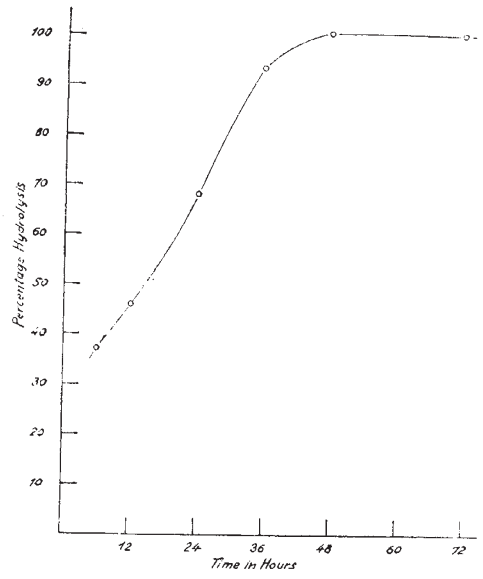
Hydrolysis of Casein with Sulphur Dioxide

Acid hydrolysis of casein usually results in the complete destruction of tryptophane and the formation of large amounts of humin. White and Sayers[1] reported that casein could be hydrolysed with very dilute sulphuric acid without complete loss of tryptophane. Other workers have reported that reducing agents such as stannous chloride and titanous chloride prevent humin formation[2,3]. Rigby[4] claims that nascent hydrogen helps to prevent destruction of tryptophane during the hydrolysis of casein with sulphuric acid.

In the course of an investigation on the use of various acids for the hydrolysis of casein, we have carried out preliminary experiments with liquid sulphur dioxide. It seemed possible that the reducing properties of this material might prevent destruction of tryptophane. It was also hoped that the gas could be removed readily from the amino-acid solution by boiling or atomization, thus avoiding the laborious procedure of precipitating the hydrolytic agent as an insoluble salt.

Commercial casein (2 gm.), sulphur dioxide (12 gm.) and ice (50 gm.) were sealed in a 'Pyrex' Carius tube and heated at 100° C. At the end of the heating period, the tube was cooled, the contents completely removed and the hydrolysed material analysed for total nitrogen (micro-Kjeldahl) and amino-nitrogen (formol titration). The results are shown in the accompanying graph. The values which are given for percentage hydrolysis were obtained by dividing the ratio of amino-nitrogen to total nitrogen by a factor of 0·85.

The hydrolysates which we obtained in the 6-hr., 12-hr. and 24-hr. experiments were water clear and



gave a strongly positive Hopkins–Cole test for tryptophane. The 36-hr., 48-hr. and 72-hr. hydrolysates were pale red in colour and the Hopkins–Cole test was negative.

It is evident from these results (1) that sulphur dioxide is a rather effective agent for hydrolysing proteins if present in sufficient concentrations; and (2) that, for a given degree of hydrolysis, there is less destruction of tryptophane with sulphur dioxide than with sulphuric acid in the absence of reducing agents.

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Influence of Sulphate-reducing Bacteria on the Corrosion Potential of Iron

The potential assumed by an iron electrode immersed in a culture of sulphate-reducing bacteria has been studied by Hadley[1], using a heterotrophic medium. These experiments indicated that the inoculation of the sterile medium, in which the potential of an iron electrode had been allowed to reach a steady value, was followed by a movement of the potential in the anodic (negative) direction. This, in turn, was followed by a rise to a steady value more cathodic (positive) than the initial value in a sterile medium. These changes of potential are shown diagrammatically in the accompanying graph. We feel, however, unable to agree with the explanation given for the first fall of potential, namely, that it is due to bacterial utilization of hydrogen with consequent depolarization of the cathodic areas. Such a depolarization should lead to a potential change in the cathodic (positive) direction, as may be seen