assay system containing 2·4 units of phosphorylase[1]. Apparently most of the inhibition is related to the caffeic acid moiety of chlorogenic acid, inasmuch as the degrees of inhibition obtained under the same conditions in the presence of 0·05 *M* concentrations of acids were as follows: chlorogenic, 93 per cent; caffeic, 85 per cent; quinic, 12 per cent. The mechanism and possible metabolic importance of this inhibition await further investigation.

Sigmund Schwimmer

Western Utilization Research and
Development Division,
Agricultural Research Service,
U.S. Department of Agriculture,
Albany 10, California.

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## Germination of Oospores of *Phytophthora erythroseptica*

Germination of comparatively young oospores of *Phytophthora erythroseptica* has been obtained following passage through the digestive tract of the garden snail, *Helix aspersa*. These oospores were produced in oat agar cultures maintained at 20° C. for 4–6 weeks. Portions of the culture were fed to snails, and the excreta collected and kept in a moist atmosphere at room temperature. The old oogonial and antheridial walls appeared unaltered by this treatment, and within a few days germination of a number of oospores was observed.

Oospores germinated by germ tubes, which sometimes terminated in a sporangium, or branched to form more than one sporangium. In many of the germinating spores varying degrees of thinning of the endospore prior to the emergence of the germ tube were observed. Fig. 1 (left) shows a germinated oospore with a partially digested endospore. In several instances, however, germination apparently occurred so rapidly that the germ tube penetrated the thick oospore wall. This can be seen in Fig. 2 (right), in which the constriction of the germ tube throughout the thickness of the wall may be noted.

A similar stimulation of germination has been observed in preliminary experiments with oospores of *Phytophthora cactorum*.

It is well known that snails secrete large amounts of cellulase. Whether the stimulation of germination obtained in these experiments is due to the activity of this enzyme on the oospore wall or to the action of micro-organisms present in the snail intestine is being investigated.

Mary Gregg

Department of Botany,
University College,
Dublin. March 25.

Fig. 1

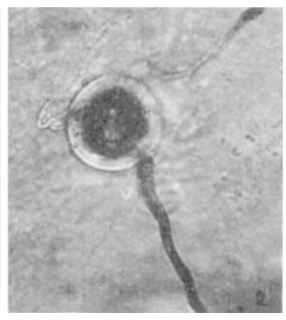

Fig. 2

## Tsunamis

The term 'tidal wave' is often used for long, high waves which follow a major earth movement or intense atmospheric disturbance affecting the sea. This term is very misleading as the waves are only very rarely connected with tides, and so oceanographers have begun to use the Japanese word 'tsunami' for this phenomenon. It has been suggested, however, that this merely means 'tidal wave' in Japanese so that its use is no more logical.

This view is, however, mistaken; for although the word is used in Japanese in a colloquial sense to describe a tidal wave, the original roots of the word do not have any reference to tides. The word has not always been used in Japanese but has become part of the language in the course of centuries and is spelt by using Chinese characters called Kanji. Japanese words spelt in this way have evolved in rather a curious fashion; the sounds of the words are mainly original to Japanese, but the letters or characters had to be borrowed from the classical Chinese language spoken nearly two thousand years ago. Chinese characters denote short words rather than letters and so each has a definite meaning. On translation to Japanese, these characters can: (1) preserve the same meaning but become associated with a different sound, (2) have a similar sound but now a different meaning, or (3) remain more or less unchanged in sound and meaning. As some words are combinations of these short words, all three types can occur in one word. In the construction of new Japanese words, the last type is generally aimed at; Chinese characters with the appropriate meanings are found and then pronounced after the Chinese manner.

The word 'tsunami' appears to belong mainly to the first type. It consists of the two letters 'tsu' and 'nami'. The part 'tsu' has identical characters with the Chinese 'shin', which can have several meanings but of which only three—a ferry, a harbour, a beach or coast—have any reference to the sea. A survey of place-names suggests, however, that the sound 'tsu' must have been used in ancient Japanese for 'harbour', for there are examples like Tsu (Honshu), Abura-tsu (southern Kyushu) and Naniwa-tsu, which is the old name of a harbour in Osaka Bay. All these places are, or have been, harbours. The sound of the second part of the word, 'nami', has always been used in Japanese for 'waves'; but in Chinese the characters used to indicate the sound would be pronounced 'rou' (or 'lou') or occasionally 'ha', but the meaning is still 'waves'.

The most likely meaning of 'tsunami' is thus a harbour wave, which appears to be a not unreasonable appellation for a 'tidal wave' as these waves affect harbours but not ships at sea. It may be interesting to note that the Japanese for tide or a genuine tidal wave is 'chō-seki'.

J. Darbyshire
S. Ishiguro

National Institute of Oceanography,
Wormley, Nr. Godalming,
Surrey. May 20.