with completely dormant seed or with seed with exceptionally rapid germination, such as cress. With some seeds a longer or shorter period may be more suitable which can be recorded as Σ 20 or Σ 5, etc.

The results obtained can be statistically analysed by the usual methods, such as chi-squared techniques. If several species are tested using Σ 10, then a direct comparison not only of their germination ability but also of their speed of establishment is obtained. This may be equally important in a study of species growing together since seedling establishment is often one of the most critical stages in the life of the plant. Σ 10 will, therefore, often be a function of the competitive ability of the species at this stage. It should also be of use when the effects of dormancy breakers or inhibitors are being studied, since it will give an indication of the overall effect of a germination regulator.

While it is true that if authors recorded germination data on a wide variety of Σ systems comparison of papers would not be facilitated, it seems probable that Σ 10 would be a suitable way of recording most data and if this became the convention it would be most useful. Furthermore, if an author found it necessary to record as Σ 20 then it would be quite easy to determine Σ 10 from his original records if this were later desired. In any event, if Σ 10 became the normal method of recording germination data but Σ 20 was found to be of greater use in a particular case, it would occupy but little extra space to publish Σ 10 also.

J. Timson

Department of Chemistry and Biology,
Hatfield College of Technology,
Hertfordshire.

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Further Observations on the Caribbean Sponge *Cryptotethya crypta* (de Laubenfels)

Recently, there has been some interest in the Caribbean sponge *Cryptotethya crypta* because of the presence, in extracts of this animal, of a number of unique nucleosides[1,2]: spongothymidine (3-β-D-arabofuranosylthymine)[3], spongouridine (3-β-D-arabofuranosyluracil)[3], and spongosine (9-β-D-ribofuranosyl-2-methoxyadenine)[4,5]. During an investigation[6,7] to ascertain whether the sponge possessed an arabinose nucleic acid, it was shown that the ratio of the amounts of ribonucleic acid to deoxyribonucleic acid was the reverse of that found in other animal tissues. This result has been confirmed histochemically[8], and evidence was presented to indicate the possible presence of an unusual nucleic acid. However, no definite evidence has come forth, as yet, for the existence of an arabinose nucleic acid in this sponge.

Interest in these arabinosides has recently been stimulated by speculations[9] concerning their role in cellular ageing and cancer chemotherapy. An integral part of these speculations is the presumption that an anaerobic mode of existence causes cells to produce arabinosides, which are then incorporated into various cellular components causing irreversible changes in metabolism. Because large amounts of arabinosides had been found in this sponge and, more particularly, because the sponge had been reported to grow more or less covered with sand, it was suggested that at least some anaerobic metabolism may take place in this animal. Our recent findings concerning the habitat of this sponge indicate that its requiring anaerobic metabolism is at least open to question, and some of the other speculations also may have to be re-evaluated.

Cryptotethya crypta was first described[10] from the waters around Bimini Island, British West Indies, where it was collected by dredging at a depth of about 5 metres. Search of the bottom using a diving helmet, at that time, showed no indication of its presence. It was concluded from this, and the fact that the pores and oscules were minute, that the sponge grew under the surface of the sand.

We have collected this sponge on several occasions and have noticed that considerable quantities of algae are usually found growing on its upper surface. The lower surface generally shows signs of having been ripped from a larger piece or a surface to which the sponge had been attached. No specimens have been seen which gave the appearance of having grown unattached, as would be expected for a sponge growing loosely under the coral sand. Specimens without a covering of algal growth are also very rare.

In March 1964, further samples of the sponge were collected at Bimini. 'SCUBA' gear was used, and the area in which the sponge was known to be found by dredging was studied. The bottom is composed of coral ledges which are covered by a thick animal and plant growth. The ledges are interspersed with fairly wide areas of coral sand, the whole presenting a fairly level bottom. On close examination of the coral ledges, *Cryptotethya* was found growing among the algae, firmly attached to the rock, and covered with growth. The sponges, because they blend so extremely well with the surroundings, are very difficult to distinguish.

On dredging a bottom such as that described, the grab traverses both the sandy areas and the ledges. It usually comes up filled with a mixture of sand, algae, and sponges. It is probable that on crossing over the coral ledges, both the sponges and algae are scraped off. When these are then mixed with sand from the other areas, it would not be difficult to conclude that the sponges came from the sandy areas. Later, a few small specimens were found growing in the lagoon east of the island. These sponges, which were growing in relatively shallow water, were found growing in a manner similar to those in the open ocean.

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M. F. Stempien, jun.
R. F. Nigrelli
G. Pulitzer

Osborn Laboratories of Marine Sciences,
New York Zoological Society,
New York Aquarium,
Coney Island,
Brooklyn 24, New York.

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FORESTRY

Ultra-thin Sections of Softwood Tracheids and Paper

During work on the structure of paper a need arose to examine it in cross-section at high resolution. The sectioning of plant cell walls in their natural state, for example in wood, does not appear to present insuperable difficulties, and techniques based on the early work of Ribi[1] are routinely used. However, no work appears to have been done on the sectioning of pulped fibres, as used in paper, in their dry unswollen state without any pretreatment. In the skilful work of Asunmaa[2] the fibres were pre-treated by swelling and reaction with thallium ethylate, and after drying from water were dried from benzene, to "open the structure".