normal sea water and produce rings with equal facility. If the animals are taken out of their tubes and placed in artificial calcium-free sea water, they will live for a number of days and are apparently normal, but they do not produce calcareous rings. Animals which have been kept like this in calcium-free sea water, if transferred back to normal sea water, produce calcareous rings. If animals removed from their tubes are placed in artificial sea water in which there is half the amount of calcium chloride required by Dittmar's formula, that is, about 210 mgm. instead of 420 mgm. calcium per litre, they will form rings at roughly the same rate of deposition as when the normal amount of calcium chloride is present. From preliminary experiments, it appears that the amount of calcium can be further reduced without inhibiting the production of calcium carbonate.

The above experiments show an independence of food in the calcium carbonate forming activities. If worms which have been feeding are at once removed to calcium-free sea water, they are unable to form the calcareous rings. There are no organs in *Pomatoceros* which might act as special stores of calcium. If the blood be considered as a possible store of calcium, it may be mentioned that the frequent severe hæmorrhage which occurs on removing the worm from its tube does not interfere with the immediate production of calcareous rings. The evidence so far collected points to the sea water as the source of the calcium required for tube building.

In Nature the production of the calcareous tube begins in March and goes on until August or September. The length of life of *Pomatoceros* is from two to three years at least. The animal begins its tube building activities in the spring presumably about the time it begins to feed, and it builds its tube continuously until the autumn.

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Relation between Structure of Pine Leaves and their Position on the Tree

THE quantitative anatomical method has recently acquired an increasing importance in determining the face, the form, or even the variety of various cultivated plants. It has also been applied in the study of the leaf of the pine (*Pinus silvestris* L.)[1,2,3]. Unfortunately, however, scarcely any of the investigators have considered the position on the tree to which are attached the leaves taken for study. Whereas, so early as 1904, Zalensky[4] discovered the law which has, in the Russian literature, acquired the name of 'Zalensky's law' (Maximov[5]), but which, unfortunately, remained unknown in western Europe and was considerably later rediscovered by a number of investigators[6]. Zalensky, studying monocotyledonous and dicotyledonous plants on a very extensive and variegated material, showed that the higher up on the tree the leaf grows (or the nearer to the end of the branch) the greater the xeromorphic properties it acquires; that is, the epidermis and mesophyll cells are smaller, the conducting strand is thicker, the cuticle and wax coating are thicker, the stomata are greater in number and smaller, the palisade tissue is more clearly defined. It was to be expected that a similar law would be found for Gymnospermæ, except that, in connexion with the peculiar structure of the leaf in conifers, it would take a slightly different form.

An investigation of the leaves of several pines by stages confirmed this supposition. It was shown that the higher up on the tree (or closer to the end of the branch) the leaf grows, the longer, broader, and thicker it is; the central cylinder is wider and thicker, the conducting bundles are larger, the resin canals are greater in number and larger, the epidermis is thicker. The difference between the upper and lower stages of hundred-year-old pines in the length and breadth of the leaves, in the thickness of the conducting tissue, in the number of resin canals, reaches 25 per cent[7].

Thus, in every quantitative anatomical study of the leaves of *Pinus*, it is necessary to choose material for comparison from the same regions on the tree, which have grown under similar conditions. Failure to observe this rule may completely destroy the value of the results of the investigation.

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Blood Groups of the Noluas of Bengal

THE Noluas are a group of people who collect reeds and manufacture different types of basket from it. They live in four districts of Bengal—Jessore, Khulna, Faridpur and Nadia. Their total strength is 1,704·884 males and 820 females. They are a short-statured, mesocephalic and mesorrhine people.

I examined the blood of 100 adult male Noluas of four districts, 25 from each. All the samples were examined carefully with fresh standard serum. The following are the data which I obtained: group *O*, 16 per cent; group *A*, 38 per cent; group *B*, 33 per cent; group *AB*, 13 per cent.

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"Clay"

IN NATURE of April 2, Dr. A. B. Searle refers at some length to a discourse on clay which I gave at the Royal Institution a few months ago. Dr. Searle is too generous to me in his account of our present knowledge of clay structure. The application of the X-ray methods to this difficult but most interesting problem was, in the first place, based on the silicate investigations at Manchester, and has been made by many workers, especially by Pauling and his collaborators in the United States, and by Nagelschmidt and others in Germany and Great Britain. My discourse was a brief summary and comment on the work done and doing by others than myself.

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