that the Athapascans, without ever developing scurvy symptoms, punctiliously cook their food to that extent which Rose and Sherman-Smith say or imply would either wholly or practically destroy their vitamin C efficiency.

With regard to the solution of this apparent dilemma between the animal experimenters and the observers of "primitive" human diets, we make four suggestions:

(1) The experimenters reach unsound conclusions with regard to human needs when they analogize for vitamin C from guinea pigs to humans.

(2) Those who measure the vitamin C content of animal tissues through the current methods have probably overestimated by from two to ten times the amount necessary to prevent scurvy symptoms in man —or perhaps they have underestimated the superiority of the human over the guinea pig mechanism for extracting and utilizing vitamin C.

(3) The experimenters have overestimated the destructive effect of ordinary cooking upon the vitamin C efficiency of animal tissues—in all probability the vitamin C is greatly weakened or destroyed only in the outermost layer of a piece of meat. Most carnivorous people boil or roast their meat in large pieces and cook to where the outside only is well done while the inside of either boiled or roast is about like the inside of our roasts. In such cooking the vitamin C efficiency may remain nearly or quite undiminished through 90 per cent. of the diameter of each chunk.

(4) Or possibly there is some component of animal tissues other than vitamin C which is able to prevent scurvy.

Perhaps the solution is in a combination of two or more of the suggestions, or in one that has not occurred to us. In any case, it is as necessary for the experimenters and the observers to get together on the "vitamin C in animal tissues" problem as it was for the astronomers and the geologists to get together on the chronology of the solar system.

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A QUANTITATIVE MEASUREMENT OF THE NATURAL RATE OF GROWTH OF CALCITE CRYSTALS IN GEODES

THERE has lately come under the observation of the writer some crystals formed in artificially manufactured stone under circumstances which give some information concerning the time during which the growth of these crystals has taken place, and, therefore, a quantitative measurement of the rate of this growth.

The Chemistry Building of Texas Technological College, in common with other buildings of the campus, is of the Spanish Renaissance type of architecture, with cloisters extending along the whole length of the building on the front. On each of the arches of these cloisters there are ornamental columns of cast stone.

In the manufacture of these columns some defects occurred, leaving small cavities near the surface. In some places the covering of these cavities has weathered off in part, exposing the interiors, which are seen to be lined with small crystals.

The cavities described above have a maximum size of about 15 mm and range in depth from 3 to 5 mm.

The crystals which line these cavities when examined under the microscope are seen to be prisms and scalenohedrons of calcite. They range in size from 1.0 mm to 2.5 mm in length and from 1.0 mm to 1.5 mm in thickness.

Since these crystals have evidently been formed since the construction of the building, they seem to constitute an interesting basis for a quantitative measurement of the rate of growth of such crystals. The building was completed early in the year 1929, so these crystals must have developed in the cavities within this ten-year period.

The writer is not aware of any quantitative data on the rate of natural growth of calcite crystals in geodes, but it seems that the development of these crystals within this time limit is growth at a more rapid rate than is generally believed. This seems especially true since the conditions under which these crystals formed are probably much more unfavorable for crystal growth than the conditions in rocks *in situ*.

The cast stone columns are so placed on the arches of the cloisters that there is little, if any, opportunity for ground water to enter the pores of the rock, and certainly not in the proportion to that of rocks *in situ*. The water which has acted as the agent of solution and deposition must in this case have been derived, largely if not altogether, from rainfall. In the climate in which this building is situated, however, there are normally long seasons of dry weather, and even the total rainfall for an entire year is not large.

Another condition which would be less favorable for the growth of crystals is that the proportion of calcium carbonate in the stone is relatively much smaller than in many rocks, such as limestones, in which calcite geodes occur.

Since these crystals have developed in a relatively short time, under conditions that are more or less unfavorable, they seem to offer an interesting illustration that processes, which may ordinarily be regarded as very slow, may sometimes proceed at a more rapid rate than usually supposed, the general opinion regarding the rate of the process being influenced, no doubt, by the natural tendency to regard all geologic processes as consuming great amounts of time.

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