## The Review's Question Box.

M., St. John.—In the article on Mineralogy in the Feb ruary REVIEW, it is stated, page 223, "Silicified wood is not, as many think, wood turned to quartz, but wood replaced by quartz." Will you kindly explain the natural process by which this is effected?

The process of petrifaction of wood may be briefly explained as follows: A stick-perhaps a whole tree, or perhaps only a small fragment-becomes buried in accumulating soil. In time the soil hardens. If then the stick decays and is washed away by circulating water, a cavity is left exactly the shape and size of the wood. Now, if the cavity should fill with mud and become solidified, an exact copy of the wood would be preserved in rock. This we call a fossil. You readily see that the process is very similar to that of casting in a foundry; where the pattern impression is made in sand, and then the melted iron poured in takes the shape of the pattern with all its surface carvings. Silicified wood is fossil, but retains more details of the original structure than the rough fossil indicated above. As the name implies, silica (quartz) is the filling material. But instead of the whole cavity filling at once, a particle of silica is deposited from solution as soon as a particle of wood is removed. By this process the change of material is comparatively slow, consequently silica supplied at different times may vary in color enabling one to see the whole structure of the wood. As the cell-walls are of a different texture from that of the cell spaces, the two would not decay at the same time. Therefore the walls, annual rings, medullary rays and all other fine markings, are brought out by this process of slow silicification. If you have a specimen to look at, I think this will help you study it.

The chemistry of this change is probably somewhat like this: Silica is soluble in alkaline water. When, therefore, such a solution comes in contact with wood, the organic acids from the decaying wood neutralize the alkali and the silica is deposited. Whole forests of silicified wood have been unearthed in some of the Western States. L. A. D.

G. S.—Can you refer me to any company which handle quarterly report cards, grading certificates, and school diplomas? If you carry any such works in stock, kindly send me sample.

A glance at our advertising columns will show the publishing firms that can supply you. Messrs. Mackinlay, of Halifax, or McMillan, of St. John, probably keep quarterly report cards and grading certificates in stock, or will print any desired form for you. In the matter of school diplomas, such as

are advertised in this issue by the Ames and Rollinson Company, we have received specimens. They are very neat and artistic and may be had at a trifling cost. Specimens will be sent by that firm if desired on mentioning the EDUCATIONAL REVIEW.

A. G.—Please answer the following questions: (1) What advantage in respect to the sun's rays has the Northern Hemisphere over the Southern, and why?

(2) Why are there greater extremes of heat and cold in the Southern Hemisphere?

(3) It is said that at the poles the year is divided into two periods, six months day and six months night; also when the sun is vertical at the equator, the days and nights are twelve hours long over all parts of the earth. Explain these contradictory statements.

To answer these questions fully would require more space than can be devoted to the subject; and the object sought would not be gained. The student should master the principles in the first chapter of Calkins' Geography from which the questions are taken. That exercise would give a working knowledge of these and many like problems.

L. R.—I have noticed tide of rivers running into Bay of Fundy, as the Shubenacadie has very little rise and fall during winter months compared with summer. Are the inclined rays of the sun at this season, with respect to our latitude, the cause?

The sun's attraction is but a small factor, compared with that of the moon, in affecting the tides. The inclination of its rays would not be an influence. You should observe more closely to determine whether, taking both neap and spring tides, there is any difference of rise during summer and winter in the rivers you speak of.

P. TEACHER, West Arichat, N. S.—A singular incident happened to a teacher on the 30th of September last in Hawkesbury, N. S. He was attending the Normal Teachers' Institute, and on the date above mentioned went to a ball in the town hall with a new umbrella that had been accidentally torn, but well patched. The next day; to his surprise, he noticed that the umbrella was no more patched, but was in every particular the same as before. The fact is that his umbrella was replaced by another precisely the same as his own, with the exception of the mending. The teacher in question will be pleased to hear of his unfortunate brother who thus lost his good article for a mended one.

K., Inverness Co.—I am reading your mineralogy articles with much interest. I have seen many strange looking rocks in the bed of a neighboring brook. If I send you some of them when the ice and snow go in the spring, will you tell me something about them?

Most certainly. I shall be glad to give you or anyone else whatever assistance I can. About a cubic inch of each specimen will be enough to send. L. A. DEWOLFE, North Sydney.