the unique solution is the Mercator projection. On the other hand, if the scale curves are circles, the only solution is stereographic projection.

In the most general conformal mapping of a sphere upon the plane, the scale function is never harmonic; but it may be a function of a harmonic function. We prove that this phenomenon occurs only in the stereographic and Mercator projections.

The double infinity of scale curves which we find for the general non-conformal mapping of a sphere (or any surface) has special geometric properties. If we consider the curves of the family passing through a fixed point, the locus of centers of curvature is necessarily a *cubic curve*. In a particular case this locus becomes a straight line, that is, the scale curves form a velocity family. This can happen only for a certain class of surfaces, which will be described in detail elsewhere.

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VITAMIN C FROM EVERGREENS

IN the interesting and informative letter by B. Shishkin to the American Association of Scientific Workers published in a recent issue of SCIENCE[1] there is a description of the search by Soviet botanists for a plentiful supply of vitamin C.

Quite recently it was discovered that needles of ordinary pine trees contain large quantities of vitamin C. . . . During the long siege of Leningrad lack of vitamin C made itself particularly felt, and the decoction made from pine needles played an important role in the prevention of scurvy.

This is an interesting example of the rediscovery by modern scientists of a fact known to a primitive civilization. Francis Parkman,[2] in "Pioneers of France in the New World," written in 1865, describes the trials of Cartier and his men during the winter encampment of 1535–36.

A malignant scurvy broke out among them. Man after man went down before the hideous disease, till twenty-five

were dead, and only three or four were left in health. The sound were too few to attend the sick, and the wretched sufferers lay in helpless despair, dreaming of the sun and the vines of France. The ground, hard as flint, defied their feeble efforts, and, unable to bury their dead, they hid them in snow-drifts. . . .

Cartier, walking one day near the river met an Indian, who not long before had been prostrate like many of his fellows with the scurvy, but who now, to all appearance, was in high health and spirits. What agency had wrought this marvellous recovery? According to the Indian, it was a certain evergreen, called *ameda*, (a spruce, or, more probably, an arbor-vitae), of which a decoction of the leaves was sovereign against the disease. The experiment was tried. The sick men drank copiously of the healing draught,—so copiously indeed that in six days they drank a tree as large as a French oak. Thus vigorously assailed, the distemper relaxed its hold, and health and hope began to revisit the hapless company.

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SPANS TWO CONTINENTS

As a result of extensive studies I have discovered that Hokan, an American Indian language spoken in California and other parts of North America, extends to South America. Hokan previously had been found to extend only as far south as the Subtiaba language of the Pacific slope of Nicaragua, Central America. Evidence for this discovery has been put in the form of a report to the Bureau of American Ethnology which demonstrates the affinity of Hokan to Quechua, an American Indian language spoken in Peru and adjacent parts. This affinity was discovered to comprise completely the phonetics and morphology, and to the identity with Hokan of 258 Quechua words. Quechua wi-qe, tear, is found for example to mean eye-water, and to be composed of wi-, eye, compare Pomo ui, eye, and -qe, water, compare Pomo -xa, water.

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BUREAU OF AMERICAN ETHNOLOGY

SCIENTIFIC BOOKS

STRUCTURAL GEOLOGY

Structural Geology. By MARLAND P. BILLINGS. 473 pp. 336 text figures. 19 plates. New York: Prentice-Hall, Inc. 1942. $4.50.

THIS carefully designed and executed new text devotes sixteen chapters (331 pages) to structural geology, grouped as follows (chapter numbers in parentheses): Mechanical principles (2); Folds (Descrip-

tion, 3; Field study and representation, 4; mechanics and causes, 5); Failure by rupture (6); Joints (7); Faults (Description and classification, 8; criteria for recognition, 9; thrust faults, 10; gravity or normal faults, 11); Secondary foliation and lineation (12); Unconformities (13); Salt Domes (14); Plutons (15); Granite tectonics (16); Extrusive igneous rocks (17).

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[1] B. Shishkin, SCIENCE, 97: 354, 1943.
[2] Francis Parkman, "Pioneers of France in the New

World." Little, Brown and Co., nineteenth edition, p. 194, 1882.