Paleozoic rocks occupy great areas of California and Oregon in (i) the Mojave Desert, (ii) the Death Valley-Inyo region, (iii) the Sierra Nevada Mountains, (iv) the Klamath Mountains, and (v) the Upper Crooked River region of Oregon. In the Colorado Desert, Peninsular Ranges, Tehachapi Mountains, and the Coast Ranges, certain undated metamorphic rocks are also very probably Paleozoic age in part.

South of the great Garlock fault the pre-Tertiary rocks of the Mojave Desert and northern San Bernardino Mountains are prevailingly metamorphic and granitoid. This broad region embraces scattered areas of mildly altered or unaltered Paleozoic rocks bearing fossils of Cambrian, Carboniferous, and Permian ages. Within the Mojave region, however, Ordovician and Silurian rocks are yet unrecognized, and rocks of Devonian age occur only near the eastern margin.

Since 1943 the broad Death Valley-Inyo region, north of the Garlock fault, has yielded important additions to the Cordilleran Paleozoic faunas. With thickness of the order of 23,000 ft, the Paleozoic column here seemingly shows few major gaps between Lower Cambrian and upper Permian. Of particular interest are newly recognized faunas from Upper Ordovician, Silurian, Lower Devonian, Lower Mississippian, Pennsylvanian, and Permian rocks.

Studies of fusulinids from zoned Pennsylvanian and Permian sections in the Inyo Range have proved of local value in structural interpretation and may have broad stratigraphic application in the Great Basin, Sierran, and northern California regions. In general it may be said that the Death Valley-Inyo Paleozoic faunas indicate relationship to the central Great Basin column.

Comprehensive study of the very important Cambrian section in the northern Inyo Mountains (Waucoba area) has thus far not been carried to fruition. Interest in such undertaking, however, is now growing.

Mapping by U.S. Geological Survey parties in the Sierra Nevada belt, with emphasis upon search for mineral deposits, has recently brought to light new Paleozoic fossil occurrences of great interest. The newly discovered faunas are of Ordovician, Carboniferous, and Permian ages. Except for the Silurian strata long ago found at Taylorsville, Calif., the existence of middle Paleozoic strata in the Sierran belt is still in doubt. It is also not yet known with assurance whether the Sierran Paleozoic rocks bear closest faunal relationship to the Great Basin province or to the Klamath Mountains region.

In the Klamath Mountains of northern California, significant additions to Silurian, Devonian, Carboniferous, and Permian faunas have recently been made. Paleontologic investigations now in progress in the Redding district of northern California confirm the Devonian age of certain limestones and punky shales assigned to the Kennett formation. However, the relations of most faunas of the Kennett formation, particularly the coral assemblages originally assigned to Middle Devonian, still remain obscure.

The Mississippian units (Baird shale) of the Redding area carry the brachiopod *Gigantoproductus*; they correlate with the *Gigantoproductus-Striatifera* fauna of Old World affinities as found in the Coffee Creek formation of Oregon [C. W. Merriam and S. A. Berthiaume, *Geol. Soc. Amer. Bull.* **51**, 1935 (1940)]. Comparison of coral and fusulinid assemblages from the Permian (?) McCloud limestone and the Nosoni formation of Permian age at Redding with those of the eastern Oregon, Sierran, and Death Valley-Inyo areas, may also be expected to yield data of paleogeographic interest.

Fossil faunas now under investigation from several localities in the northern Klamath Mountains provide evidence of widespread and varied Silurian deposition in this portion of the Pacific Coastal belt. No direct relationship to known Silurian faunas of the Great Basin is so far indicated by provisional studies of the Klamath Silurian rocks.

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New High-Pressure Phases of Silica

L. Coes [*Science* **118**, 131 (1953)] has described a new high-pressure crystalline phase of silica, produced at 35,000 atm and 500 to 800°C. Paul P. Keat, graduate student in the School of Ceramics at Rutgers University, has recently discovered another crystalline phase of silica, produced hydrothermally above the critical point of water, under certain conditions of chemical environment. Information on this phase will probably be published within the next few months.

Each of the new phases of silica has a distinctive structure, making it quite different from the well-known crystalline phases, quartz, tridymite, and cristobalite.

Fearing that the discoverers might be too modest to name the new phases after themselves, I have sought and obtained permission from Coes and Keat, both of whom are now at the Research Laboratories of the Norton Company in Worcester, Mass., to propose names for the new phases—namely, *coesite* for the phase produced at 35,000 atm, and *keatite* for the phase produced hydrothermally. W. T. Schaller, of the U.S. Geological Survey, has been kind enough to check his collection of lists of new mineral names and tells me that these two names have not been previously used for any mineral.

Schaller took occasion to register his objection to the use of the suffix *-ite* on the ground that it is an established custom to give this termination only to names of natural minerals. Without attempting to pass on the merits of this principle, I would only remark that it is very convenient to have a single word by which to refer to a new substance or a new phase of an old substance, and that metallurgists and chemists have long been accustomed to name products after the discoverer or some other individual by the use of the termination *-ite*. I need only refer to austenite and carnegieite. On the other hand, no writer is justified in completely ignoring a convention that is already well established, as the industrial chemists have done in naming their petroleum derivatives "petrochemical," when, as nearly everybody knows, petrochemistry is the chemistry of rocks.

As an alternative for the benefit of any reader who wishes to stand firmly on the mineralogist's principle, I suggest that he call Coes' new phase of silica *silica C* and that he call Keat's phase *silica K*.

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Tavorite and Barbosalite: Two New Phosphate Minerals from Minas Gerais, Brazil

Two more new phosphate minerals—tavorite and barbosalite—have been discovered in the Sapucaia pegmatite mine in Minas Gerais, Brazil. Three other minerals, recently described in the mineralogical literature, were named frondelite, faheyite, and moraesite. The Sapucaia permatite is granitic in composition, is confocally zoned on the basis of texture and mineral composition, and has had a significant production of muscovite and beryl.

Tavorite and barbosalite are intimately intergrown secondary phosphate minerals that occur with many other phosphate minerals in the pegmatite: heterosite, ferrosicklerite, hureaulite, vivianite, strengite, metastrengite, childrenite, variscite, frondelite, faheyite, moraesite, triphylite, montebrasite, and apatite. Other accessory minerals include spodumene, beryl, tourmaline, and sulfides. Quartz, perthite, albite, and muscovite are the essential minerals of the rock.

Tavorite is a hydrous lithium ferric phosphate, the ferric analog of montebrasite with which it is isostructural. It is named in honor of Elysiario Tavora, professor of mineralogy, Universidade do Brasil, Rio de Janeiro. The mineral occurs as a yellow very fine grained aggregate with a mean index of refraction of 1.807 and a specific gravity of 3.29. The chemical analysis shows the following percentages: Li_2O 7.64, FeO 2.39, MnO 1.47, Fe_2O_3 42.57, P_2O_5 39.78, H_2O^+ 5.76, and H_2O^- 0.40. The formula, as derived from the chemical analysis, is

$$(Li_{0.90},Fe^{II}_{0.06},Mn^{II}_{0.04})Fe^{III}_{0.94}(PO_4)_{0.99}(OH)_{1.13}$$

as compared with the ideal formula $LiFe(PO_4)(OH)$. X-ray powder data show principal *d*-spacings at 3.045, 3.285, 4.99, 4.68, and 2.474 A.

Barbosalite is a hydrous ferrous ferric phosphate, the ferric analog of scorzalite. It is named in honor of A. L. de M. Barbosa, professor of geology, Escola de Minas, Minas Gerais, Brazil. The mineral occurs in black nearly opaque grains and masses that may be very fine grained aggregates. Thin grain edges are dark blue-green with evident pleochroism. The apparent mean index of refraction is 1.810, and the specific gravity is 3.60. The chemical analysis, recalculated to 100 percent after subtracting admixed tavorite, is FeO 13.12, MnO 2.82, Fe_2O_3 41.70, P_2O_5 37.54, and H_2O 4.92 percent. Its ideal chemical formula is $Fe^{II}Fe^{III}_2(PO_4)_2(OH)_2$. X-ray powder data indicate principal *d*-spacings at 3.361, 3.313, 4.84, 3.239, 3.160, and 2.327 A. The mineral is structurally identical with a synthesized compound described by Gheith as ferrous ferric lazulite and both are closely related to, but have a larger cell size than, scorzalite.

Tavorite and barbosalite are examples of complete substitution of trivalent iron for aluminum in known mineral structures.

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A Simplified Method for Determining Radioisotopes in Tissues

Several years ago, Schwebel, Isbel, and Karabinos [*Science* **113**, 465 (1951)] described a method for the measurement of C^{14} labeled carbohydrates, dissolved in pure foramamid; this served primarily as a medium of low vapor pressure usable in a modified flow gas counter. During a current study of the distribution in the body of a group of beta-emitting colloids (Au^{198}, $CrPo_4$, Y^{90}, it became necessary to have a method that would make possible rapid disintegration of entire organs of moderate-sized animals and of the entire bodies of smaller species. Formamid, even when hot, does not effect such solution directly, but we have found that when it is added to freshly prepared homogenates of animal tissues, a clear colloidal solution results even at room temperature. Such a solution may be rapidly liquid-counted at infinite thickness employing the usual end-window Geiger tube.

There is no need for prolonged acid or alkali digestion of tissues or evaporation of assay samples. As a result, there is a marked saving of time, and data can usually be completed on the same day the animals are sacrificed.

The method is equally applicable to gamma-emitters since the 50-percent formamid can be pipetted easily in the small volumes required for well types of scintillation tubes.

Organs that may be broken down in the Potter-Elvehjem homogenizer are so treated, in the presence of 10 to 100 ml H_2O. Larger samples and small animals are first broken up in a Waring Blendor, and a suitable aliquot put through the Potter-Elvehjem. We have found it advisable to pour, rather than pipette, 10-ml samples of this homogenate into graduates or volumetric flasks and to add an equal volume of formamid, with measurement in 30-ml beakers, at constant distance from the counting tube. An inexpensive and portable rate meter, such as the 1615 B, or a comparable instrument, has served adequately, and the direct readings again facilitate the running of a large num-