

The litter of pea straw is left on the soil surface. Winter wheat is sown on this type of soil. Wheat stubble is plowed in. The dry land plus the stubble plowed in makes a non-washing surface. Wheat stubble can now be plowed in without burning the field in advance due to the constant cropping practice, establishing a much shorter straw and consequently a short, light stubble. The yield is somewhat lighter, of course, but the two-year picture is always better than one-year crops after summer-fallow.

In further conclusion, it is pointed out that the plan has worked well since 1932. The farm has been abnormally profitable during a low price period. Erosion is being controlled apparently 80 per cent as compared with the summer-fallow. Combined with the soil conservation plans of the Federal Gov-

ernment, the acreage left to soil building is not a total temporary loss, as it would be without this grant. Machinery application has been greatly economized and the savings in this field have largely offset all increases due to the double activity which follows cropping all the farm each year. The lower yields of wheat per acre as compared with summer-fallow do not appear to lessen the profit per acre as compared with the two-year standard. It should be noted that these systems promote the growth of weeds generally, and noxious weeds have a better chance than formerly. This factor seems to be the only drawback encountered. Attention is being focused on this problem and progress is being made. We would continue to advocate this general plan for the large-scale producer of crops in the Palouse region.

Phosphate Minerals in a Pegmatite North of Deary, Idaho

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A beryllium-bearing pegmatite was opened up during the summer of 1937 about ten miles north and a little east of Deary, Idaho, not far from the old mica-beryl mines. A small collection of minerals from the mine dump and new face included one striking specimen. It is a reddish-brown mass of interlocked cleavable grains, each about a sixteenth to an eighth inch in diameter. This material greatly resembles some of the apatite from Ontario. Coating the reddish mineral is a layer about an eighth-inch thick, of a deep blue color. Close examination of the specimen shows that the texture of the center mineral carries over into the blue shell which is therefore a pseudomorph after the reddish center mineral. Along the border, some grains are half blue and half yet reddish-brown.

The central reddish mineral is streng-

ite, a hydrous ferric phosphate, $\text{FePO}_4 \cdot 2\text{H}_2\text{O}$, with a small amount of manganese, probably as proxy for an equivalent amount of iron. Below is a table for comparison of the optical and chemical properties of the Idaho mineral with those of the few occurrences of strengite yet described. Of the latter, the data were obtained from Winchell¹ (which see for original articles) and Brush-Penfield.² The data in Larsen³ are copied from the same sources as Winchell's data.

In all the occurrences described, strengite is typically a pegmatite mineral, though its habit varies from massive to isolated crystals in cavities.

The blue coating on the strengite is the hydrous ferrous phosphate, vivianite, $\text{Fe}_3(\text{PO}_4)_2 \cdot 8\text{H}_2\text{O}$. Both optical and chemical tests confirmed this determination without question. The properties

OPTICAL AND CHEMICAL PROPERTIES OF STRENGITE

	Giessen, Germany	Giessen, Germany	Lexington, Virginia	Pala, California	General	Deary, Idaho
n_p	1.708	1.71	1.730	1.697		1.695
n_m	1.708	.....	1.732	1.714		1.700
n_g	1.745	1.735	1.762	1.722		1.725
$n_g - n_p$	0.037	0.025	0.032	0.025		0.030
2V	very small	.....	29°	medium		small
Optical character	pos.	.....	pos.	neg.		pos.
Cleavage	Perfect (001), imperfect (100)					1 good
Chemical Prop.					Fus. 2.5 to 3	do.
					Water in CT	do.
					Ferric iron	do.
						Mn
					Magn. after heating	do.
					PO ₄	do.

of vivianite are sufficiently well known, from a study of many specimens, to demand a close correspondence for newly-reported specimens. To date, vivianite has been reported from but few places in Idaho⁴ and Washington,⁵ and in most of these it is found as an alteration product of fossil wood or bone. In the Gold Hill property of Idaho County, it occurs as veinlets in an altered lava. In the new occurrence, in a pegmatite cutting schists, an organic origin seems most improbable.

The third mineral, in fine-grained buff veinlets cutting the phosphates, is highly ferriferous ankerite. Comparison of its optical properties with those of the magnesium-iron dolomite series listed in Winchell⁶ showed its composition to be Ca (Fe,Mg) (CO₃)₂, with about three times as much iron as magnesium. Wet tests confirmed this, and also showed the presence of a small quantity of manganese, a common element in ankerite.

The order of formation of the three minerals described above seems clear-

ly to be: strengite, vivianite, ankerite. No attempt has yet been made to determine how they fit into the order of crystallization of the other minerals in the pegmatite; and it would be unprofitable to speculate, as yet, on the nature and changes of the pegmatite solutions from which they were formed. This account simply calls for attention to an uncommon mineral, strengite, a rare type of occurrence for vivianite, and an unusual pegmatite carbonate, all in one place.

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