Crystallographic relations: Monoclinic $a : b : c = 2.4786 : 1 : 1.3663$; $\beta = 72°11'$. Forms: $(001)c$, $(\bar{1}00)a$, $(\bar{2}01)d$. Twinning and composition plane $= (110)m$.

Optical properties: Biaxial (+) $2V = 65°$. $\alpha = 1.492$, $\beta = 1.496$, $\gamma = 1.500$; $X = b$, $Z \wedge c = 35°$.

THE IDENTITY OF "LEHNERITE" AND LUDLAMITE

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A recent paper[1] on the phosphate-bearing pegmatites of Hagendorf, Bavaria, contained descriptions of several new minerals, among which was "lehnerite" a basic hydrous phosphate of iron, manganese, and magnesium. The optical properties and specific gravity of a specimen labelled "lehnerite" recently acquired in this laboratory, were determined, since such data were not given in the original description. As shown in the following table the optical properties of "lehnerite" are so near those of ludlamite as to indicate that the former is simply a manganese-magnesium bearing ludlamite.

	α	β	γ	Opt. Char.	Orientation	Dispersion	Axial angle	Cleavage	Specific Gravity	Hardness
"Lehnerite,"	1.650	1.669	1.689	+	$Z \wedge C$ = large	$\gamma > \nu$ perc.	large	(001) perfect	3.19	3.5
Ludlamite[2]	1.653	1.675	1.697	+	$Z \wedge C$ = 67°	$\gamma > \nu$ perc.	82°	(001) perfect	3.12	3-4

A comparison of the chemical analyses of the two minerals shows likewise a close similarity in their composition. Allowing for the possible inaccuracy of the analyses, especially that of ludlamite, which is an old analysis, the two minerals appear to be chemically the same.

	"Lehnerite"	Ludlamite
P_2O_5	33.87	30.11
FeO	45.91	52.76
MnO	3.10	—
MgO	2.21	—
H_2O	14.91	16.98
Total	100.00	99.85

[1] Mullbauer, F.; Die Phosphatpegmatite von Hagendorf i. Bayern; *Zeit. Kryst. Min.*, **61**, 331, 1925.

[2] Larsen, E. S., Microscopic Determination Non-Opaque Minerals., *U. S. Geol. Surv., Bull.* 679, 223, 1921.

The formulae assigned to the two minerals are:
ludlamite—$2Fe_3P_2O_8.Fe(OH)_2+8H_2O$.
"lehnerite"—$2R_3P_2O_8.R(OH)_2+5H_2O$
where R = (Fe,Mn,Mg)

While the crystallographic data for "lehnerite" do not seem to agree with those given for ludlamite, in Dana, it is probable that the differences are due to another orientation and a different unit form. There is, however, a similarity in the following interfacial relations:

"lehnerite"	$c(001) \wedge d(101) = 52°57'$
ludlamite	$c(001) \wedge t(201) = 52°37\frac{1}{2}'$

It is therefore believed that "lehnerite" is identical with ludlamite.

VEINS WITH FIBROUS QUARTZ AND CHLORITE FROM THE VICINITY OF PROVIDENCE, RHODE ISLAND

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INTRODUCTION

Two of the localities visited on the New England Intercollegiate Geological Field Excursion in the vicinity of Providence, Rhode Island, in October, 1924, showed veins of fibrous quartz cutting graphitic schists. A study of specimens of these veins, collected by representatives from the Division of Geology, Harvard University, and by Professor A. C. Lane of Tufts College and kindly placed at the disposal of the writer, led to the conclusions reached in this paper. The study was carried out under the direction of Professor E. S. Larsen of Harvard University, to whom the writer is indebted both for a knowledge of the methods used and for many helpful suggestions during the course of the work.

Hawkins[1] described veins of fibrous quartz from the vicinity of Providence, Rhode Island, and concluded that the quartz, grading from fibrous material into massive white vein quartz, is of primary origin and that the greenish color is due to an admixture of actinolite in varying proportion. The determination of actinolite was based on color and extinction angle.

[1] Hawkins, A. C.; Fibrous Quartz from Rhode Island; *Am. Min.*, **3**, 149-151, 1918.