'KYANOPHYLITE'—A NEW MINERAL OF THE HYDROUS ALUMINIUM SILICATE GROUP, DERIVED FROM KYANITE, FROM MAVINHALLI, MYSORE

ABOUT a mile and a half W.S.W. of Mavinhalli, in the ground consisting of the composite series of kyanite graphite schists, talc biotite schists, sillimanite quartz schists and other types of granulitic rocks, are found some loose bits and small lumps of an apple-green mineral which looks like some variety of talc or chlorites. It is, however, much harder than any of these minerals, and contains a large percentage of alumina and practically no magnesia at all. On chemical analysis, one of the specimens gave the following percentages:—

SiO_2–45·20; Al_2O_3–41·04; CaO·3·72; MgO–0·0; K_2O–0·73; Na_2O–3·84; Loss on ignition (mostly H_2O)–5·00.

The data show that it is essentially a hydrous aluminium silicate.

In thin sections the mineral forms feather-like aggregates, and shows fairly low refraction (about 1·58 to 1·60) and low birefringence,—the interference tints being low greys and hardly rising above yellow and red of the first order. In its physical and optical properties it does not correspond to any of the known varieties of the group of hydrous aluminium silicate minerals. The mineral forms a new type possessing its own individual characters, and will be described in detail in the next volume (XLIII) of the *Records of the Mysore Geological Department.*

Mysore Geological Dept.,
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MIXTURES OF TETRYL AND T.N.T.

ACCORDING to Giua,[1] and Taylor and Rinkenbach,[2] tetryl (trinitrophenylmethylnitramine) and T.N.T. form a compound which melts at 67·6° C. and which contains the tetryl and the T.N.T. in the molecular proportion 1 : 2 respectively. Their conclusion is based on the presence of a very flat maximum in the melting-point diagram for tetryl/T.N.T. mixtures at a point which corresponds to the above proportions and melting-point. Efremov and Tikhomirova,[3] using a similar technique, reported that they could find no evidence for the existence of a compound.

As an alternative method of investigation we have determined the molecular weight of the alleged compound by measuring the depression of the freezing-point produced when it is dissolved in benzene. With three separate samples, prepared by melting the tetryl (m.p. 129·1° C.) and T.N.T. (m.p. 80·3° C.) together, figures of 233, 232 and 233 were obtained taking 51·2° C. as the molecular depression for benzene. These figures are, approximately, what would be expected from a mixture. The compound would have a molecular weight of 741.

In addition, it is possible to separate the tetryl and the T.N.T. by treatment with carbon tetrachloride at 0° C.[4]

Clearly, then, tetryl and T.N.T. in the molecular ratio 1 : 2 do not behave as a compound in solution at about 0-5° C.

We wish to thank the Director of Armaments for permission to publish this observation.

Inspectorate of Military Explosives, Kirkee, M. D. OWEN. J. VERGHESE.
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1. Giua, *Gaz. Chim. Ital.*, 1915, 45, **2**, 32. 2. Taylor and Rinkenbach, *Ind. and Eng. Chem.*, 1923, **15**, 73. 3. Efremov and Tikhomirova, *Ann. Inst. Anal. Phys. Chim.*, 1926, **3**, 269–301. 4. Allen's *Commercial Organic Analysis*, 3, 927.