

## MINERALOGICAL SOCIETY (LONDON)

A meeting of the Society was held on Thursday, November 5th, 1953, at 5 p.m., in the apartments of the Geological Society of London, Burlington House, Piccadilly, W. 1 (by kind permission).

The following papers were read:—

### (1) A NEW REVIEW OF THE CHLORITES

By Dr. M. H. Hey.

The nomenclature of the chlorites and the composition boundaries between the several species and varieties are reviewed in the light of recent work. Equations are derived correlating the physical properties with the composition.

### (2) THE IDENTIFICATION AND DETERMINATION OF PLAGIOCLASE FELDSPARS BY X-RAY POWDER METHODS

By Dr. J. Goodyear and Mr. W. J. Duffin.

X-ray powder patterns have been obtained for a number of synthetic plagioclases and chemically analyzed materials of composition 0% to 100% anorthite.

The use of the x-ray powder data for the purpose of plagioclase identification and analysis is discussed.

### (3) IRON-TITANIUM OXIDE MINERALS IN ROCKS OF THE LAYERED SERIES OF THE SKAERGAARD INTRUSION, EAST GREENLAND

By Dr. E. A. Vincent and Mr. R. Phillips.

The opaque iron-titanium oxides occurring as primary phases in eight rocks of the Layered Series of gabbros and ferrogabbros have been examined with the ore-microscope, separated and chemically analyzed. The rocks all carry ilmenite in discrete crystals, associated in varying proportion with magnetites containing exsolution lamellae of ilmenite. Analyses of these magnetites show that several contain more FeO than is required to build the molecules  $\text{Fe}_3\text{O}_4$  and  $\text{FeTiO}_3$ . In those with the greatest excess of FeO, x-ray powder photographs show the lines of the magnetite pattern to be shadowed or doubled by diffuse lines due to titanospinel,  $\text{Fe}_2\text{TiO}_4$ , while exsolution bodies in this phase in the magnetite are visible with the ore-microscope at high magnifications. In other instances this exsolution has not been discerned, and it is suggested that a limited quantity of the  $\text{Fe}_2\text{TiO}_4$  molecule may remain in solid solution in the magnetite at ordinary temperatures and after slow cooling.

The contents of minor constituents in both magnetites and ilmenites—Mg, Mn, Al, Cr, V, Zn, Cu—vary fairly smoothly through the Layered Series and reflect both the ease of entry of these elements into the magnetite and ilmenite crystal lattices and their availability in the magma at each stage.

$\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$  and Ti in the magnetites vary much less regularly, and in particular the magnetites of bands very rich in opaque oxides are much richer in the  $\text{Fe}_2\text{TiO}_4$  molecule than those of adjacent average rocks from the same horizon. The composition of the final assemblage of iron-titanium oxide minerals seems to be largely determined by the equilibrium between ferrous and ferric oxides and oxygen at the time of their formation.

## (4) AN IRON-RICH FACIES OF THE BEAVER BAY DIABASE, MINNESOTA

By Dr. I. D. Muir.

This rock contains three pyroxenes, and a fayalitic olivine. From the exsolution lamellae in the pyroxenes and the inversion of part of the pigeonite to orthopyroxene, it is concluded that cooling was more rapid than for comparable rocks from the Skaergaard intrusion. The nature of the 2-pyroxene boundary is discussed.

## (5) THE REV. WILLIAM GREGOR, DISCOVERER OF TITANIUM

By Sir Arthur Russell, Bart.

The following paper was taken as read:—

(1) SPECTROGRAPHIC AND X-RAY DATA ON SOME FLUORITES  
FROM THE TRANSVAAL, SOUTH AFRICA

By Dr. J. G. D. Steyn.

Cube-edge determinations, spectrographic analyses and chemical analyses are given. It is shown that the replacement of Ca<sup>++</sup> by Sr<sup>++</sup> in the fluorite structure causes an increase in the cube-edge and also that some minor elements of fluorite are due to contaminating minerals present along fine cracks or as inclusions in the fluorite. The cube-edge for the purest fluorite is identical to that for synthetic fluorite of optical grade.

*(Titles and abstracts kindly submitted by G. F. Claringbull,  
General Secretary.)*