MONDAY AFTERNOON, MAY 18

Presiding:

S. A. FORMAN, W. E. HALE

10. DAVID P. GOLD: Some minerals from the Oka alkaline complex
11. S. M. A. BOUTCHER,* W. W. MOORHOUSE: Nature and distribution of iron silicates in the Gunflint iron formation, Port Arthur
12. JUNE E. RAPSON: Intrusive carbonate in the Ice River complex, British Columbia
13. G. C. AMSTUTZ,* W. C. PARK: New mineralogic observations on stylolite seams
14. E. WM. HEINRICH: Lithium metasomatism around pegmatites
15. W. PETRUK: Mineralogy at the Mount Pleasant tin deposit in New Brunswick
16. MARY E. MROSE:

TUESDAY MORNING, MAY 19

M.A.C. EXECUTIVE COUNCIL MEETING

JOINT SESSION—M.A.C., G.A.C., S.E.P.M., A.A.P.G.

TUESDAY AFTERNOON, MAY 19

Presiding:

GUY PERRAULT, A. T. PRINCE

17. C. B. SCLAR: High-pressure studies in the system $MgO-SiO_2$ and the constitution of the Upper Mantle
18. D. C. HARRIS, E. J. BROOKER: X-ray spectrographic technique for analysis of minute mineral samples
19. J. R. SMITH,* R. G. ARNOLD: X-ray fluorescence determination of Ni, Cu, Zn in rock powders and variable matrices
20. J. MANDARINO: Critical analysis of the Gladstone-Dale rule and its constants
21. ALFRED J. FRUEH, JR.: Crystal structure of dawsonite
22. DENIS M. SHAW,* A. M. KUDO: Test of the discriminant function in the amphibolite problem

M.A.C. BUSINESS MEETING
4:00 P.M.

ABSTRACTS OF A.A.P.G.-S.E.P.M.-G.A.C.-M.A.C. PAPERS

TORONTO, CANADA, MAY 18–21, 1964

ALLEN, P., The University, Reading, Berks, England

SNAGS IN A FRESH-WATER PALEOENVIRONMENT

The Lower Wealden cyclothems (sand→clay) contain all the ingredients for the dangerous game of analogic reasoning. "Basal conglomerates," "seat-earths," etc., (e.g., Jour. Geology, 1962, p. 508, fig. 1) lie in wait for the stratigrapher who, stuffed with pedagogical cycles and formational names, remains blissfully unaware that scientific principles (derived from experiment and observation of modern sedimentation) are more important.

Interpretation of the cyclothems is primitive. We do not know for certain which members are transgressive and which regressive. "Offshore" and "onshore" are difficult directions to define because the same aquatic flora, fauna, and sedimentary facies lay out to sea as on the land. We are not sure whether the cycles are regressive→transgressive, regressive→regressive, transgressive→regressive, or transgressive→transgressive. Diachroneity can not be tested because a precise chronology is not available.

Paleoslope and paleosalinity data are inconclusive. Most soils, channels, and current-directional structures turn out to be environmentally ambiguous. Regional sedimentary drift can be determined only from large-scale structures, in the sandy, lower parts of the cyclothems. They include channels, Knight-type scoop-bedding, and textural and compositional "streaming." "Streaming" alone (after trend analysis) yields vectors. In the upper parts of the cyclothems, thin passage beds leading back (via aquatic soils) to clays suggest contradictory interpretations: (1) transgressive offshore sediments, (2) regressive point-bar and backswamp alluvia. Erosional surfaces (cutting ?subaerial soils) separate the upper and lower parts of the cyclothems. The aquatic soils were not eroded before deposition of the overlying clays (cf. Pennsylvanian cyclothems—or are some of these misinterpreted?). Minor cyclothems, though resembling their hosts, may have a different significance.

Evidence from sedimentology, paleoecology, detrital provenance, basin structure, etc., lacks meaning until integrated. At present the best model is a southward-regressive sandy delta or bar-and-lagoon complex, blanketed rapidly beneath a northward-transgressive sheet of offshore clay.

Ultimate causes of the water-level movements are sought among the marine equivalents of the Wealden. Ephemeral barriers (depositional and/or diastrophic swells?) lay between the two environments. Correspondence of marine and non-marine movements suggests eustatic control.

AMSTUTZ, G. C., University of Missouri, Rolla, Missouri, and University of Heidelberg, and PARK, WON. C., McMaster University, Hamilton, Ontario, Canada

NEW MINERALOGIC OBSERVATIONS ON STYLOLITE SEAMS

Stylolites in the Fredonia limestone of southern Illinois fluorspar areas and in other typical limestone districts were sampled systematically and the geometric patterns classified into six types.

The following features in these stylolites were investigated in detail: (1) pressure lamellae in carbonates and their mechanical symmetry; (2) oriented quartz prisms along stylolite layers; (3) the diagenetic paragenesis of sphalerite, galena, and pyrite; (4) the residual accumulation of sphalerite along stylolite seams; (5) pyrite along bituminous portions of the seams.

The following conclusions are derived: (a) sphalerite formed before, galena and pyrite during, the stylolite formation; (b) the age of the stylolites in most cases falls within Dapples' second and third period of diagenetic compaction and crystallization; and (c) the diagenetic age of the stylolites and their relation to slumping patterns suggest, together with other sedimentation features, that most of the V-structures in the fluorspar dis-