Owing to the peculiar character of these several gneisses and their continuous association with the limestones and with bands of quartzite, which rocks are certainly not of igneous origin, but are met with in all highly metamorphosed sedimentary series, it was believed that some evidence might be obtained, pointing to a sedimentary origin in the case of these gneisses also. A large number of them were therefore carefully examined.

Under the microscope these do not show the cataclastic structure usually presented by the crushed and granulated igneous rocks of the system. They seem to have recrystallized under the influence of the pressure which has served to crush these other rocks. They are, however, now completely crystalline, no clastic material can be detected in them, although the character and arrangement of the constituent minerals is often suggestive of the metamorphosed rocks found in granite contact zones. The quartzites also, which are very frequently associated with these gneisses and which seldom occur elsewhere, do not, under the microscope, afford anything which could be taken as conclusive evidence of a clastic origin.

Important evidence, however, bearing on their origin was obtained from a study of their chemical composition. Four typical representatives of these gneisses were selected and analysed.

Evidence from chemical composition.

The analyses are given in the accompanying tables, together with analyses of three slates for purposes of comparison. Only one of these gneisses, No. V., is taken from the Laurentian area actually embraced in this sheet, the others however come from the continuation of this area immediately to the north. Analyses Nos. II., V., VII. and VIII. were made for me by Mr. Walter C. Adams, and analysis No. I. was made by Mr. Nevil Norton Evans, Lecturer in Chemistry in McGill University. To both gentlemen I desire to acknowledge my great indebtedness.

I. Gneiss from St. Jean de Matha, province of Quebec. A fine-grained garnetiferous sillimanite-gneiss, containing also much quartz and orthoclase. Graphite and pyrite are also present, the latter causing the gneiss to weather to a very rusty colour. It occurs in thick bands interstratified with white garnetiferous quartzite, the whole lying nearly flat.

II. Gneiss from the west shore of Trembling Lake, province of Quebec. A fine-grained dark-gray gneiss composed of quartz and orthoclase with much biotite, and containing little white streaks which were evidently at one time continuous little bands. These are composed of sillimanite. Garnets appear here and there in