Warm sulphuric acid opened the 6-membered ring of the addition product; and by a process involving the methoxyl-group, formed a new series of compounds having entirely different properties. These have been identified as heterocyclic 5-membered ring compounds by synthesis in another way. Some of the products, intermediate in this transition, have been isolated and described.

PH. D. GEOLOGY

NORMAN R. SCHINDLER

IGNEOUS ROCKS OF DUPRAT AND ROUYN LAKE AREAS, QUEBEC.

A description is given of the geology of two areas fifteen miles apart; one, the Duprat lake area, is situated in a district characterized by massive copper deposits; the other, the Rouyn lake area, in a district of gold mineralization. A comparative study is made of the different types of metamorphism in the two areas.

The sodic character of the igneous rocks in both areas is stressed, and a discussion is given of the relations of this igneous assemblage to the "spilitic suite".

Composite intrusives of a peculiar type, encountered in the Duprat area, are fully described.

PH. D. CHEMISTRY

ERNEST SOLOMON

KINETICS OF HOMOGENEOUS GAS REACTIONS AT HIGH PRESSURES.

Previous investigations of the kinetics of homogeneous unimolecular gas reactions have never been carried out in a high pressure region. A new apparatus and technique is described whereby it is possible to investigate these ractions over a wide pressure range.

This apparatus has been applied to the investigation of the decomposition of ethyl ether at 426°C. from 2,000 to 14,500 cms. The rate of reaction is found to increase with pressure to 10,000 cms. and then remain constant.

Due to the inability of current unimolecular theories to account for the results obtained, it is proposed to modify these theories. It is shown that by assuming that the number of degrees of freedom involved varies with the time between molecular collisions it is possible to explain these results. This theory is elaborated and shown to be a valuuable addition to unimolecular theory.

PH. D. CHEMISTRY

SAUL MICHAEL TRISTER

SYNTHESIS, STRUCTURE & PROPERTIES OF CYCLIC ACETALS.

Propionaldehyde, isobutyraldehyde, trimethylacetaldehyde, and dibromacetaldehyde have been condensed with glycerol, the isomeric five- and six-membered glycerol acetals isolated in each case, and their structure and physical properties determined and compared with those of related compounds.

The ratio in which the two isomers are formed from the different aldehydes has been carefully determined in each case and shown to depend to a marked degree, on the popularity of the aldehyde in question. The case of glycerol cyclic acetal formation (total mixed glycerol acetal formation) is shown to decrease, with increase in the negative polarity of the aldehyde group, while the proportion of the five- to the six-membered acetal increases.

This work has furnished further information on (a) ring-partition; (b) ring-migration; (c) the influence of polar radicles, or atoms, on the ease and nature of acetal condensations involving glycerol.

PH. D. EXPERIMENTAL MEDICINE

ELEANOR M. VENNING

EXPERIMENTAL STUDY OF BLOOD FATS IN HEALTH AND DISEASE.

The study of blood fats has been divided into five sections.

I. Methods for the extraction and estimation of total fat, fatty acid, cholesterol, iodine number and lipoid phosphorous, in blood and tissue have been carefully tested. The Stewart and White method has been shown to give erroneous values for fatty acid and a modified method has been worked out for the estimation of this substance.