

times as fast as sodium hydroxide. Temperature change had a very great influence on the rate of cooking. Alkali-lignin, cellulose decomposition products and salts in the cooking liquor decreased the rate of reaction.

PH. D.

CHEMISTRY

HERBERT EDMUND MORRIS

THE DISCONTINUITY AT THE CRITICAL TEMPERATURE:  
ADSORPTION, DENSITY, DIELECTRIC CONSTANT.

An apparatus has been devised for measuring the apparent adsorption of gases, vapors and liquids on solid surfaces up to the critical pressure and critical temperature. The system propylene-alumina has been investigated. There was no discontinuity in the adsorption process with a change from vapor state to gaseous state as defined by the critical temperature. Apparently adsorption did not occur from the liquid state and there was a marked discontinuity in the adsorption curve with a change from liquid state to gaseous state. This may be due to a difference in the forces of attraction between liquid and gas or vapor molecules and the solid surface.

The discontinuity in density above the critical temperature has been confirmed and it has been shown that this is not due to a gravimetric effect.

A dielectric cell for use in determining the dielectric constants of a liquid and its equilibrium vapor has been described. The dielectric constant of propylene liquid and vapor has been determined. There was no indication that the values for liquid and vapor would be equal at the critical temperature.

All of these results are in accord with previous observations from this laboratory that there is a discontinuity in the region of the critical temperature.

PH. D.

PSYCHOLOGY

N. W. MORTON

THE INDUSTRIAL QUALITY OF THE UNEMPLOYED,  
WITH PARTICULAR REFERENCE TO OCCUPATIONAL CLASSIFICATION.

Psychological tests were administered to Montreal unemployed men of a wide range of ability. The majority possessed sufficient ability to make industrial re-assimilation no special problem, but there was an abnormally large group of inferior mentality which may present a particular difficulty of rehabilitation. General mental ability and recency of employment varied negatively with age, and it seemed probable that clerical and mechanical ability and certain personality traits varied with age in the same way. Recency of employment apparently bore no relationship to education or test scores. Unemployed men receiving relief assistance were found to be older than and inferior to those not receiving aid. Employed clerical workers were superior in education, general alertness and clerical ability to unemployed clerical workers. Intelligence, education and clerical ability bore a marked relation to Taussig occupational grades, while technical and mechanical workers possessed greater mechanical ability, and salespeople showed differences in certain personality traits.

PH. D.

CHEMISTRY

JAMES BROWN NORMINGTON

THE CONDENSATION OF GAMMA KETONIC ESTERS  
WITH AROMATIC ALDEHYDES;  
RING-CHAIN TAUTOMERISM IN GAMMA KETONIC ACIDS.

Gamma ketonic acids of three distinct series have been prepared and their behavior in certain characteristic reactions determined. It has been shown that there is no relationship between the kind of groups present in these acids and their structures. To illustrate this, the action of methyl magnesium iodide and of acetyl chloride has been studied in detail. In the most highly branched series—the acrylic acids—the resemblance if the lactols to triphenyl carbinol has been noted. To account for the action of acetyl chloride, in the other two series, a mechanism for the reaction has been proposed and discussed.

PH. D.

GEOLOGY

VLADIMIR J. OKULITCH

GEOLOGY OF THE BLACK RIVER GROUP  
IN THE VICINITY OF MONTREAL.

The rocks of the Black River Group (Middle Ordovician) in the vicinity of Montreal outcrop in a narrow belt which traverses across the Island of Montreal, Ile Bizard, and Ile Jesus. They comprise