

In dogs with pyloric obstruction, when anorexia developed, the gastric contractions were found to resemble normal stomach movements, reacting in the same manner to substances introduced into the intestine. Some observations were made on hibernating woodchucks obstructed below the pancreatic ducts.

Vitamin B deficiency greatly diminished the gastric secretion and abolished the secretory effect of sham-feeding and histamine. The addition of yeast to the diet quickly restored the normal secretory reaction.

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PH. D.

GEOLOGY

JOHN THOBURN WILLIAMSON

THE ORIGIN AND OCCURRENCE OF THE CHROMITE DEPOSITS  
OF THE EASTERN TOWNSHIPS, QUEBEC.

The chromite deposits of the Eastern Townships of Quebec occur in elongate intrusive masses of post-Ordovician age. These intrusives are ultrabasic in character and consist of a series ranging from dunite to granite and are the result of differentiation in place. The dunite peridotite portion of the ultrabasic complex is largely serpentinized. Chromite occurrences are restricted to the dunite peridotite. The mineral occurs in both massive and disseminated form, the deposits showing a linear arrangement due to movement in the magma. They are considered to be the result of the magmatic differentiation within the ultrabasic magma. Even where the country rock has been altered by circulating waters, the chromite has been unaffected by them.

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PH. D.

CHEMISTRY

CHARLES VERNON WILSON

PART I: THE STEREOCHEMISTRY OF CERTAIN TERTIARY AMINES.  
PART II: STUDIES ON LACTOLS.

The condensation of certain  $\gamma$ -ketonic esters with aromatic aldehydes has been shown to produce either lactols or the isomeric open chain acids. Ten of these compounds have been prepared and four methods have been used to distinguish between the lactol and the open chain structure, (1) reaction with acetyl and thionyl chlorides, (2) action of *p*-bromaniline on the chloride thus formed, (3) loss of carbon dioxide when heated above the melting point and (4) indirect titration with N/100 barium hydroxide solution. The limitations of each method are discussed.

A complete review of all previous work on tertiary amines having three different substituent groups, is given, including theories that have been proposed to account for their non-resolvability. A method of attacking the problem from a new viewpoint is described. This was unsuccessful because it was found impossible to prepare unsymmetrical 1:4 dibromides.

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PH. D.

CHEMISTRY

CARL ARTHUR WINKLER

AN INVESTIGATION OF THE CONTINUITY OF STATE IN ONE AND  
TWO COMPONENT SYSTEMS.

An apparatus has been devised, and a technique developed, whereby the pressure-temperature relationships of systems of one or more components may be investigated with ease and accuracy; the pressure-temperature relationships for three two component systems comprised of carbon dioxide, methyl ether and propylene have been studied. This work forms the basis for proposed future investigations on two component systems.

The surface tensions of methyl ether and propylene have been determined with a high degree of accuracy, at temperatures more closely approaching the critical than had previously been done for other liquids. In addition to assisting in the elucidation of the problem of continuity of state, the data have been of interest and importance in testing numerous relationships in the critical region. A preliminary investigation has also been made of the applicability of the ring method, with the aid of a quartz spiral, to the determination of surface tension in the neighborhood of the critical temperature.

An apparatus and technique have been developed for the investigation of densities in either uni- or poly-component systems near, or at, the critical point. Data are presented, and generalizations drawn, which not only indicate the extreme versatility of the apparatus, but substantiate the postulate of discontinuity of state at the critical point.