adapted Pregl’s method of microcombustion to provide semimicrocombustion methods for the determination of carbon, hydrogen, and nitrogen; developed the procedure for the use of dichlorofluorescein as an adsorption indicator in the titration of chloride ion with silver ion; studied vinyl and allyl ethers and their rearrangement (forerunner of the Boord-Swallen synthesis of olefins), the synthesis of unsaturated fatty acids and antimalarial drugs, and naturally occurring antioxidants; discovered the abnormal Claisen rearrangement; studied hydrogen isotope substitution and exchange in benzene ring derivatives, particularly the use of electrophilic hydrogen isotope substitution as a measure of electron density in the aromatic ring.