weight which contain a long aliphatic side chain in the α-position.

The mycolic acids are mostly linked up, in the bacilli within acetone-insoluble lipopolysaccharides of high molecular weight. Human virulent strains differ from others by containing three characteristic amino acids in their lipopolysaccharide (alanine, glutamic acid, and α,ε-diamino-pimelic acid) (fig. 1). The percentage of this N-containing lipopolysaccharide seems to be roughly parallel to the virulence of the strains (tables VI, VII).

The last chapter discusses the biological properties of the different lipid fractions. Particular attention is paid to the cord factor of H. BLOCH and to the problem of acid-fastness.

Brèves communications - Kurze Mitteilungen
Brevi comunicazioni - Brief Reports

o-Quinones as Dienophiles

In view of the recent publication[1] concerning the reactions between *o*-quinones and olefines, we would like to state our results. Full details will be published elsewhere.

o-Benzoquinone in ether reacts rapidly with excess *cyclo*-pentadiene to give a pale yellow, rather unstable adduct of the formula $C_{17}H_{14}O_4$; i. e. two molecules of quinone to one of diene.

Dissolved in dry ether, tetrabrom-*o*-benzoquinone reacts rapidly with *cyclo*pentadiene at room temperature, to give 3 products:

(1) This is deposited from the reaction mixture in 26% yield. It is a diketone, m. p. 205° (dec.), giving a quinoxaline m. p. 215° (dec.). This quinoxaline has also been described by HORNER and MERZ[1] (l. c.). The diketone readily adds water to give a colourless, thermally unstable hydrate.

(2) The benzdioxan derivative described by the above authors, m. p. 122° from ethanol; crystallised from benzene it forms solvated crystals, m. p. 96°, which effloresce in air. Yield—30%.

(3) A very small amount of a yellow substance, m. p. 140°, of the same empirical formula as 1, but in contrast to it, containing reactive bromine. On heating above its melting point it rearranges to give 1.

A quantity of tar is formed as well.

In suspension in acetone, 4-acetylamino-*o*-benzoquinone adds *cyclo*pentadiene to give a yellow, thermally unstable adduct, m. p. *c.* 145°(dec.), of formula $C_{13}H_{13}O_3N$. This fails to give a quinoxaline, but is readily converted by dilute alkali to a colourless isomer, m. p. 200° (dec.), which gives the characteristic colour reactions of catechol, and can readily be oxidised to a red substance.

An attempt to add butadiene to tetrabrom-*o*-benzoquinone in ether at 100° gave a very small amount of a colourless, unidentified substance. Attempts to add butadiene to the other two quinones, and an attempt to add furan to *o*-benzoquinone failed.

J. A. BARLTROP and JOHN A. D. JEFFREYS

The Dyson Perrins Laboratory, Oxford, December 30, 1950.

[1] L. HORNER and M. MERZ, Ann. Chem. *570*, 89 (1950).

Zusammenfassung

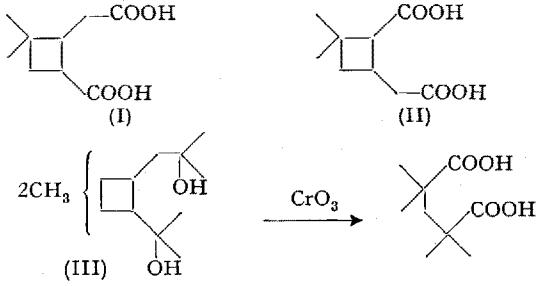
Beim Zusatz von *Cyclo*pentadien zu *o*-Benzochinon entsteht eine Verbindung, in welcher zwei Moleküle von Chinon an einem Molekül von Dien gebunden sind. Butadien und Furan werden nicht addiert.

*Cyclo*pentadien gibt mit Tetrabrom-*o*-benzochinon drei Stoffe; ein Diketon, ein Benzdioxan und einen dritten Stoff von unbekannter Bauart. Bei Verwendung von Butadien haben wir nur Spuren eines Produktes gefunden.

4-Acetylamino-*o*-benzochinon addiert *Cyclo*pentadien unter Bildung eines Diketones, welches beim Zusatz von Natronlauge sehr glatt in ein Catechol übergeht. Butadien reagiert nicht.

Zur Konstitution der Caryophyllensäure

In der Literatur ist die Ansicht vertreten worden, daß eine Entscheidung zwischen den auf Grund des oxydativen Abbaus[1] für die Caryophyllensäure in Frage kommenden Konstitutionsformeln (I) und (II) nur durch Synthese möglich sei.



D. H. R. BARTON[2] hat hingegen kürzlich darauf hingewiesen, daß die Oxydation des Tetramethylglykols III zu α,α,α',α'-Tetramethylglutarsäure[3] für die Caryophyllensäure die Formel (II) ausschließt. In Übereinstimmung damit haben F. L. DAWSON und G. R. RAMAGE[4] fest-

[1] W. C. EVANS, G. R. RAMAGE und J. L. SIMONSEN, J. Chem. Soc. London *1934*, 1806. – L. RUZICKA und W. ZIMMERMANN, Helv. chim. acta *18*, 219 (1935).

[2] D. H. R. BARTON, J. org. Chem. *15*, 457 (1950).

[3] L. RUZICKA, J. C. BARDHAN und A. H. WIND, Helv. chim. acta *14*, 423 (1931).

[4] F. L. DAWSON und G. R. RAMAGE, J. Chem. Soc., London *1950*, 3523.