

FIG. 25.4. Oxygenic photosynthesis. Cyanobacteria (like eucaryotic phototrophic microalgae) possess two photosystems, photosystem I and II.

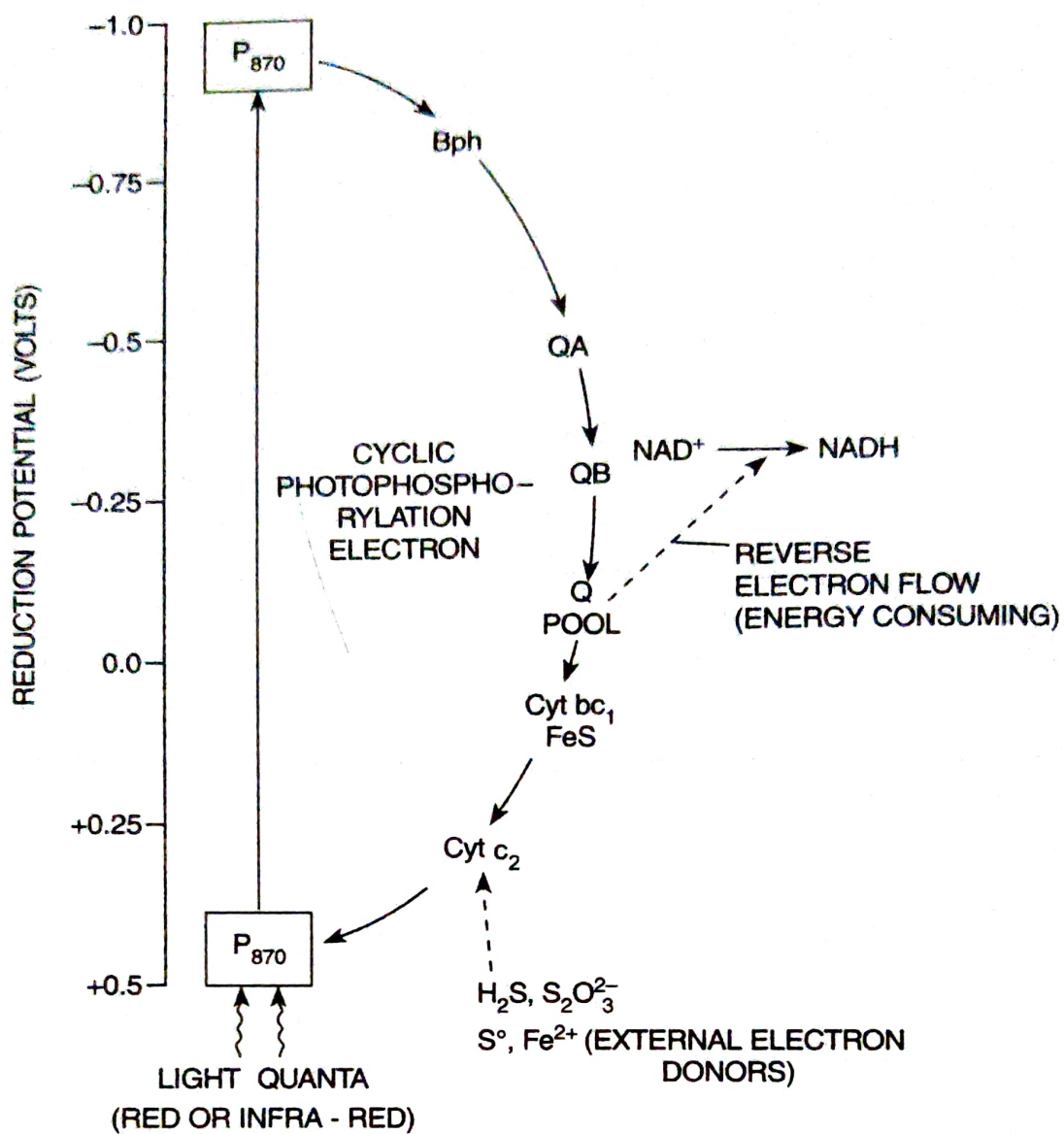


FIG. 25.5. Scheme of electron flow (cyclic photophosphorylation) in anoxygenic photosynthesis in purple bacteria.

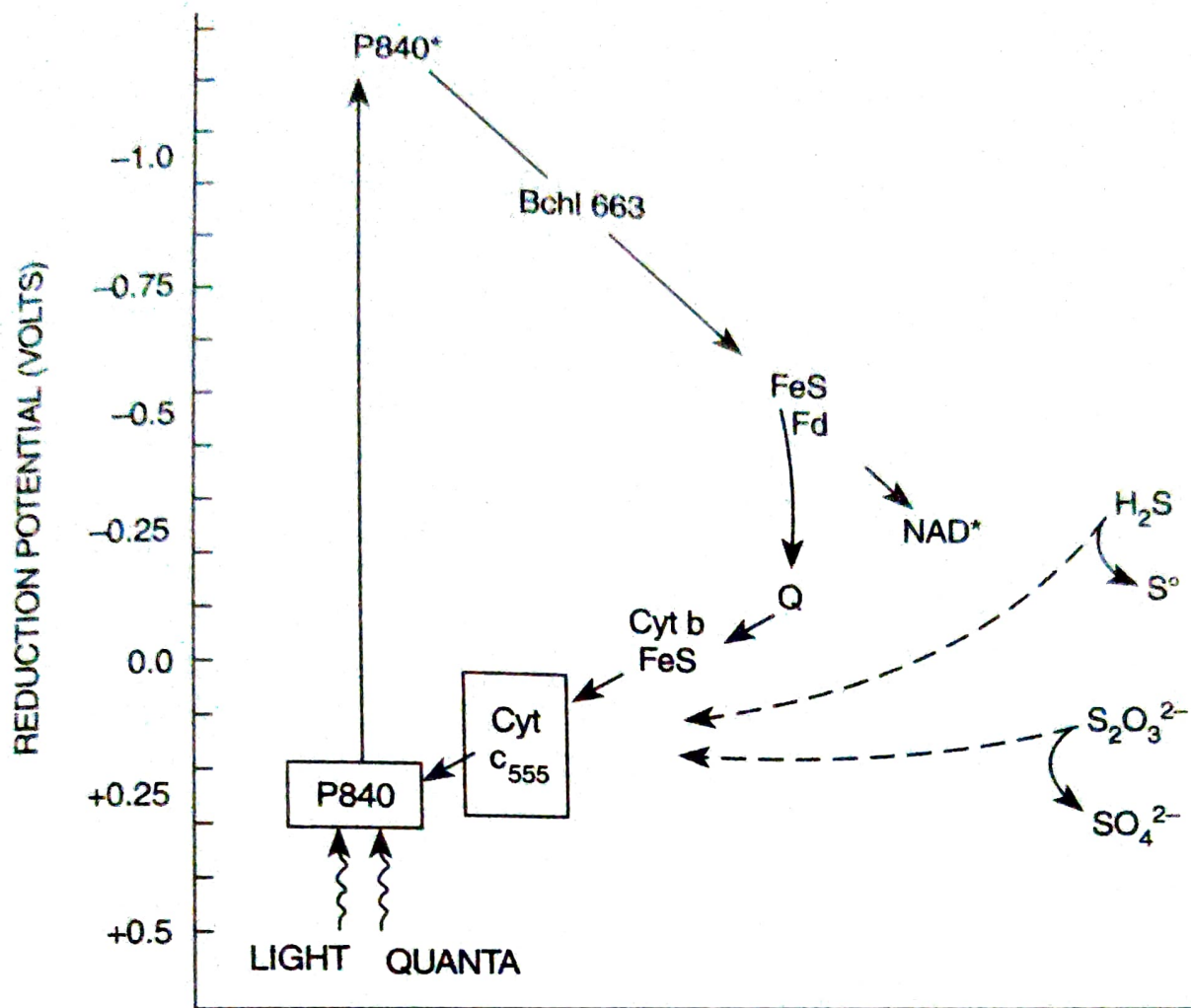


FIG. 25.6. Scheme of electron flow (cyclic photophosphorylation) in green bacterium (*Chlorobium*).

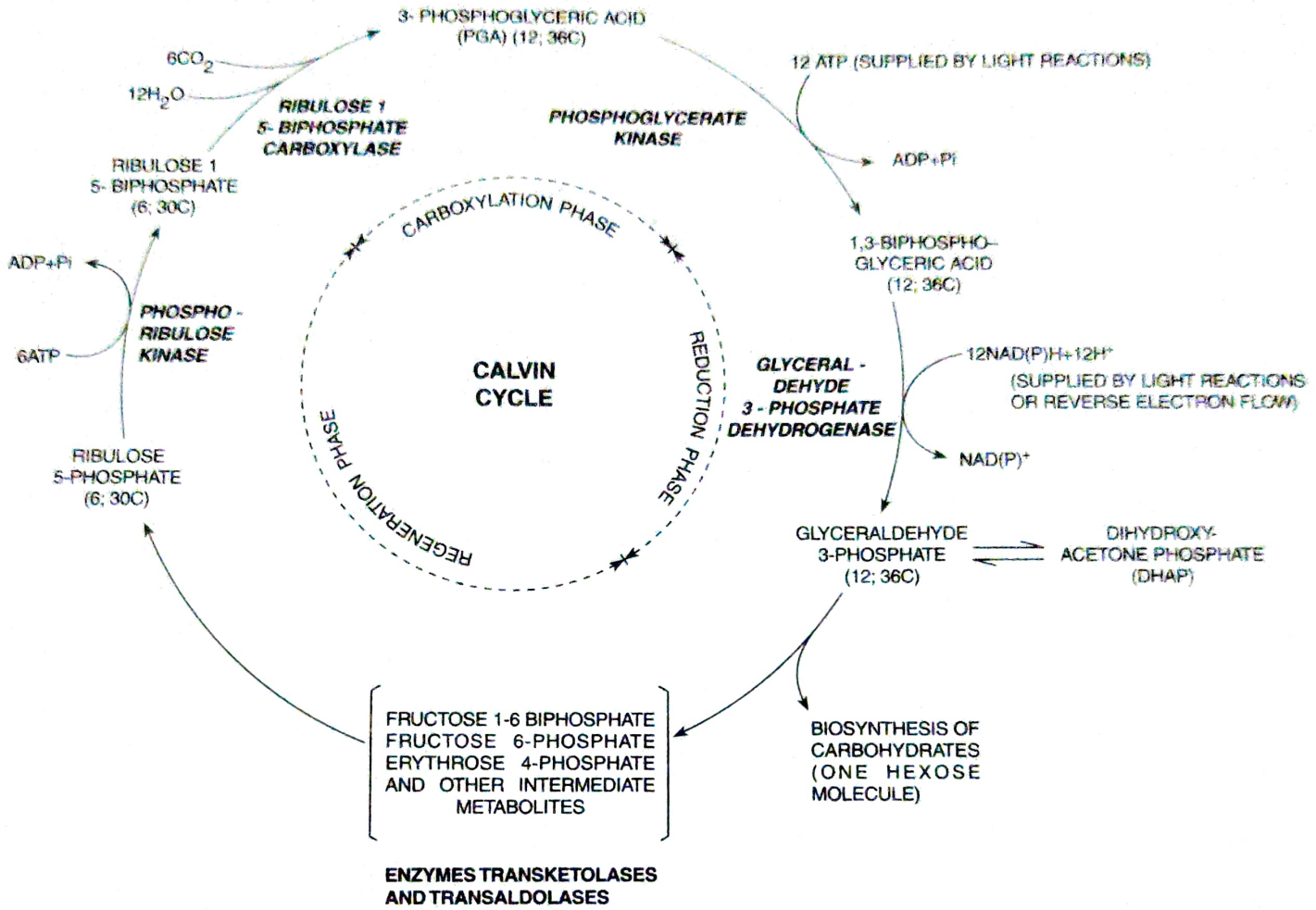


FIG. 25.7. The Calvin Cycle (the reductive pentose cycle). Each six molecules of carbon dioxide incorporated, one glucose molecule is obtained. Within brackets are the number of molecules and the number of carbon atoms.

Summarized Account of Important Differences in Photosynthetic Systems of Microbes

	Eukaryotic microalgae and cyanobacteria	Green and purple bacteria
(i) Photosynthetic pigment	Chlorophyll	Bacteriochlorophyll
(ii) Photosystem II	Present	Absent
(iii) Photosynthetic electron donors	H ₂ O and organic matter	Inorganic (H ₂ S, H ₂ , S etc)
(iv) Pattern of oxygen production	Oxygenic ¹	Anoxygenic
(v) Source of carbon	CO ₂	CO ₂ and/or organic matter
(vi) Primary products of energy conversion	ATP + NADPH	ATP

¹ = Some cyanobacteria (e.g., *Oscillatoria limmetica*) and microalgae use only photosystem I under certain conditions and do not produce oxygen hence behave anoxygenically.