SEED DORMANCY: BREAKING BY UNCOUPLERS AND INHIBITORS OF OXIDATIVE PHOSPHORYLATION. L. A. T. Ballard and A. E. G. Lipp (Division of Plant Industry, Commonwealth Scientific and Industrial Res. Organ., Canberra, A.C.T., Australia). *Science* **156**, 398–9 (1967). When 2,4-dinitrophenol and carbon dioxide were applied together to dormant seeds of *Trifolium subterraneum L.* (subterranean clover), 2,4-dinitrophenol did not disturb the breaking of dormancy which carbon dioxide usually induces in legume seeds. On the contrary, on its own, it promoted germination in a substantial proportion of seeds; a similar effect was produced by other uncouplers or inhibitors of oxidative phosphorylation.

STUDIES ON STRUCTURAL UNITS OF HUMAN ERYTHROCYTE MEMBRANE. I. SEPARATION, ISOLATION AND PARTIAL CHARACTERIZATION. S. Bakermann and G. Wasemiller (Dept. of Pathol. and Oncol., Univ. of Kansas Med. Center, Kansas City, Kansas). *Biochemistry* 6, 1100–13 (1967). The hemoglobin-free membrane showed barely detectable adenosine triphosphatase (ATPase) activity; amino acid analyses were reproducible and the membrane material was found to be a lipoglycoprotein with 55% protein, 35% lipid and 10% carbohydrate.

INTENSIFICATION OF EXPERIMENTAL ATHEROSCLEROSIS BY SEMI-STARVATION DIET. J. M. Bailey and Jean Butler (Biochem. Dept., George Washington Univ. School of Med., Washington, D.C.). *Proc. Soc. Exp. Biol. Med.* 124, 1119–21 (1967). Following a 12-week period of feeding 1% cholesterol, rabbits developed atherosclerotic plaques in thoracic aorta having an average severity (percent of aorta surface covered with plaques) of 24 ± 4%. Following return to a normal cholesterol-free diet for 12 weeks there was a small increase in plaque intensity to 36 ± 6%. In contrast, in a group of rabbits maintained on a semi-starvation level cholesterol-free diet, there was a striking increase in plaque intensity to 59 ± 8%. These results are interpreted in terms of a more severe hyperlipemia which was found in this latter group of animals in response to the reduced caloric intake rather than to any specific nutritional deficiency.

A LONG CHAIN TERPENYL PYROPHOSPHATE SYNTHETASE FROM MICROCOCCUS LYSODEIKTICUS. C. M. Allen, W. Alworth, A. Macrae and K. Bloch (Conant Lab., Harvard Univ., Cambridge, Mass.). *J. Biol. Chem.* 242, 1895–1902 (1967). A new terpene pyrophosphate synthetase (Enzyme II) distinct from the previously reported geranylgeranyl pyrophosphate synthetase (Enzyme I) has been isolated from extracts of *Micrococcus lysodeikticus* and partially purified. Enzyme II catalyzes the elongation of terpenoid allyl pyrophosphates by isopentenyl pyrophosphate to long chain products. The order of effectiveness of various allyl pyrophosphates in the elongation reaction is geranyl pyrophosphate > farnesyl pyrophosphate > geranylgeranyl pyrophosphate > dimethylallyl pyrophosphate. Isolation of double labeled terpene alcohol from experiments with $^{14}$C-isopentenyl pyrophosphate and $^{3}$H-farnesyl pyrophosphate and determination of $^{14}$C:$^{3}$H ratios indicates the presence of 7 to 10 isoprene units in the elongation products with a predominance of the $C_{35}$ and $C_{40}$ alcohols. The same chain length distribution is estimated from the mass spectra of the acid-hydrolyzed products of Enzyme II. The incorporation of $^{32}$P from $^{32}$P-isopentenyl pyrophosphate and the acid lability of the $^{32}$P-labeled material indicate that the products formed are pyrophosphate derivatives. In contrast to shorter chain terpene pyrophosphates, the products formed by Enzyme II are not cleaved by bacterial alkaline phosphatase. They also have the unusual property of binding very strongly to protein.

VITAMIN A THERAPY IN CHILDREN WITH KWASHIORKOR. Sheila M. Pereira, Almas Begum, T. Isaac and Mary E. Dumm (Dept. of Nutr. Res. of the Christian Med. College and Hosp., Vellore, South India). *Am. J. Clin. Nutr.* 20, 297–304 (1967). Oral and intramuscular administration of oily and water-miscible preparations of vitamin A was tried in children with kwashiorkor and in normal controls. Intramuscular injections of vitamin A in oil did not raise serum levels in all children with protein-calorie malnutrition. Vitamin A in oil orally administered was poorly absorbed in children with kwashiorkor during their first few days in the hospital. Water-miscible vitamin A by oral or intramuscular routes elevated serum levels rapidly in patients and controls. Absorption of oral water-miscible A was erratic. Based on these results a single intramuscular injection of 1,000,000 IU of water-miscible palmitate is recommended for the initial treatment of children with kwashiorkor and severe vitamin A deficiency.

(Continued on page 330A)