Testes were obtained from 48-hour pupae of the Oregon-R strain of D. melanogaster and cultured by the procedure described previously (1,2). Testes aseptically obtained from pupae which were grown under sterile conditions were cut into several fragments in Drosophila saline solution. They were filled with germ cells in various stages of maturation. The anterior apical fragments of testis contained spermatogonia (Fig. 1), about 5 μ in diameter. The middle fragments contained germ cells at more advanced stages of spermatogenesis: spermatocytes and spermatids, about 15 - 20 μ in diameter (Fig. 2). In the posterior fragments the sperm at early stages of spermiogenesis were found (Fig. 3).

These fragments of testes were cultured at 28°C in T-5 flasks with 0.8 ml of Medium K-17, which was slightly modified from Medium K-6' (1,3) and supplemented with 0.1 mg/ml fetuin, 5 mg/ml peptone and 15% fetal bovine serum.

After 24 hours of cultivation, no or slight detectable changes were found in the anterior or middle fragments which contained spermatogonia, spermatocytes or spermatids, although these cells increased slightly in size and testicular sheath cells grew and extended on the glass surface of the culture flasks. On the other hand, the sperms in the posterior fragments expanded markedly towards both ends along the long axis of the sperm bundles (Fig. 4), indicating that they attained to more advanced stage of spermiogenesis. This result indicates that under culture conditions employed, the process of spermiogenesis would be traced under a phase microscope, whereas it is relatively difficult to examine the early process of spermatogenesis.