



FIGURE 1-4. Summary of the major stages of meiosis in a generalized germ cell.

chromosome still consists of two chromatids ($2c$) connected by a centromere. No new duplication of chromosomal DNA is required between the first and second meiotic divisions because each haploid daughter cell resulting from the first meiotic division already contains chromosomes in the replicated state.

The second meiotic division, called the **equational division**, is similar to an ordinary mitotic division except that before division the cell is haploid ($1n, 2c$). When the chromosomes line up along the equatorial plate at metaphase II, the centromeres between sister chromatids divide, allowing the sister chromatids of each chromosome to migrate to opposite poles of the spindle apparatus during anaphase II. Each daughter cell of the second meiotic division is truly haploid ($1n, 1c$).

Meiosis in Females

The period of meiosis involves other cellular activities in addition to the redistribution of chromosomal material. As the oogonia enter the first meiotic division late in the fetal period, they are called **primary oocytes**.

Meiosis in the human female is a very leisurely process. As the primary oocytes enter the diplotene stage of the first meiotic division in the early months after birth, the first of two blocks in the meiotic process occurs (Fig. 1-5). The suspended diplotene phase of meiosis is the period when the primary oocyte prepares for the needs of the embryo. In oocytes of amphibians and other lower vertebrates, which must develop outside the mother's body and often in a hostile environment, it is highly advantageous